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FUNCTIONAL SERVICING REPORT

Millbrook Subdivision, Phase 2

West Side of County Road 10, North of Fallis Line
Community of Millbrook
Township of Cavan Monaghan
County of Peterborough

September 2018
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Prepared For: **Towerhill Development Inc.**

CORTEL GROUP

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VALDOR WATER RESOURCES

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1.0 INTRODUCTION

Valdor Engineering Inc. has been retained by Towerhill Development Inc. to provide consulting engineering services for the proposed Millbrook Phase 2 Subdivision located on 47.8 hectare parcel on the west side of County Road 10, north of Fallis Line, in the Community of Millbrook, Township of Cavan Monaghan, County of Peterborough as illustrated in **Figure 1**.

The subject site is located in the Millbrook urban expansion area which is planned to accommodate new residential, industrial, commercial and institutional lands. The subject lands are part of a larger land holding which includes the Phase 1 lands on the south side of Fallis Line which have recently being serviced and houses are currently under construction. The future Phase 3 lands and partially outside the limits of the expansion area as seen in **Figure 2**.

1.1 Existing Conditions

The subject site is bounded to the north and west by agricultural lands and to the south by Fallis Line and a rural residential lot. The site is bounded to the east by County Road 10, the Township municipal offices a cemetery and a community centre which is currently under construction. The northeast corner of the site is traversed by Tributary C of Baxter Creek which flows in an easterly direction under County Road 10. A second watercourse, Tributary B, traverses the site draining in a northeasterly direction joining Tributary C upstream of County Road 10. The geotechnical and topographical conditions of the site are summarized as follows:

1.1.1 Geotechnical

A Geotechnical Investigation Report prepared by Geo-Logic Inc. included eight boreholes ranging in depth from 6.1m to 9.8m. Based on the investigation it was determined that the site is covered by a topsoil layer having a depth of approximately 300mm underlain by till comprised of clayey silt. The boreholes are included in **Appendix "H"**.

1.1.2 Topography

The surface condition of the subject site can be generally described having a rolling topography. Based on a recent topographic survey of the site, the property slopes from Fallis Line down in a northeasterly direction towards Tributary C. Based on an existing elevation of approximately 252.0 m at Fallis Line and an existing elevation of 241.0 at the north limit of the development, the differential of 11.0 m equates to an overall average slope of approximately 1.5% which is considered to be relatively moderate.

1.2 Proposed Development

The proposed development consists of a mix of lots for detached dwellings and street townhomes as well as bocks for apartment buildings. The lot frontages for the detached dwellings will range from 10.6m to 15.8m while the townhomes will consist of 7.6m frontages. Access for the subdivision will consist of a road network with two road connections off Fallis Line and one road connection to County Road 10. A park will be

centrally located. A block of land has been established for a stormwater management facility to control and treat stormwater runoff. The remainder of the site, associated with the tributaries of Baxter Creek, will be retained in environmental protection blocks. The Draft Plan of Subdivision is contained in **Figure 3**. The development statistics and the equivalent population data are summarized in **Table 1**.

Table 1. Development Statistics

Land Use	**Area** (Ha)	**Residential Units** (No.)	**Equivalent Population** (persons)
Detached Dwellings	15.367	360	1,260
Street Townhomes	5.983	244	732
Condominium Apartments	2.680	192	384
SWM Pond	1.733		
Parks, Open Space & Walkways	1.313		
Environmental Protection Lands	10.529		
Agricultural	1.222		
Roads, Reserves & Widenings	8.944		
TOTAL	**47.771**	**796**	**2,376**

1.3 Purpose of Report

This report has been prepared in support of the application for draft plan approval for the subject property. The primary intent of the report is to demonstrate the viability of water and wastewater servicing, storm drainage and stormwater management, grading as well as vehicular and pedestrian access for the proposed development with respect to applicable guidelines, policies and design criteria.

This report has been prepared based on a review of the topographic survey and background studies, discussions with municipal staff and a visit to the site. This document provides guidance for detailed engineering design of the subdivision.

1.4 Approving Authorities

This report will be circulated for review, comment and approval to:

1. The Township of Cavan Monaghan;
2. The County of Peterborough; and
3. The Otonabee Region Conservation Authority (ORCA).

2.0 WATER SERVICING

The existing Millbrook water servicing system consists of a water treatment facility, with water taken from three local wells, a water storage tank and a network of watermains that service most of the existing urban area of the community.

The existing Millbrook Water Treatment Plant (WTP) consists of 3 wells, each with 25L/s capacity, chlorine disinfection and a chlorine contact tank. The existing water storage tank was built in 1976 and is located on the east end of Millbrook on a local high point of land. The existing 10.4m diameter tank has a useable storage capacity of 1,410m^3 with a top water level at an elevation of 278.0m.

The Township of Cavan Monaghan completed a Class Environmental Assessment (Class EA) in June 2014 to investigate on the alternatives to address concerns associated with the water storage and water servicing needs. In this regard, the expansion of the existing urban boundary of Millbrook will require additional water storage and expansion of the existing water servicing network to the new development area.

The Class EA addressed three issues related to the existing water system that need to be considered which included the insufficient water storage for future growth, the fact that watermains do not extend into the new service area or new water tank and the insufficient pressures for new service area.

Based on a review of alternatives and a public consultation process it was determined that the preferred alternative is to construct a new, larger water storage tank on the Township Office site, and a new watermain to connect to the tank to the existing water supply main. This alternative would provide for planned growth, meet current and future water storage needs and improve available fire flows during maximum day demand compared to existing system. This alternative also includes the ultimate decommissioning of the existing water storage tank in Millbrook. A booster station is also being proposed within Township lands that will ensure proper minimum fire pressures are maintained during maximum day demand throughout the higher elevations within the development. The water analysis study and the booster station design is being prepared separately by RV Anderson Associates Limited for the Township and the results of the study will be incorporated during the detailed design of the subdivision.

The location of the existing WTP and the existing water storage tank as well as the proposed storage tank, booster station are indicated in **Figure 4B**. The following is a summary of the water servicing requirements for the subject site.

2.1 Domestic Demand

The domestic water demand is to be calculated using the Township and Ministry of the Environment design standards which includes the following parameters:

Residential Average Day Demand:	450 L/person/day
Maximum Day Factor:	2.00
Peak Hour Factor	3.00

A detailed tabulation of the domestic water demand calculation is detailed in **Table A1** of **Appendix "A"**. The demands are summarized in **Table 2** below.

Table 2. Domestic Water & Fire Flow Demand

Land Use	Equivalent Population (Persons)	Domestic Demand (L/min)	Maximum Day Demand (L/min)	Peak Hour Demand (L/min)	Fire Flow (L/min)	Maximum Day Plus Fire Flow (L/min)
Detached Dwellings	1,260	394	788	1,181	5,000	
Street Townhomes	732	229	458	686	4,000	
Apartments	384	120	240	360		
TOTAL	**2,376**	**743**	**1,485**	**2,228**	**5,000**	**6,485**

2.2 External Watermains

In accordance with the recommendations of the Class EA, a trunk watermain has been constructed northerly from the existing Millibrook community along County Road 10 and across the frontage of the subject site. This trunk watermain supplies the existing water storage tank which is located on the site of the municipal offices which is located on the high point of the urban expansion area. This tank feeds a local distribution network which will provide water supply to the municipal office, the proposed community centre, the existing Phase 1 lands, the subject Phase 2 lands as well as the future Phase 3 lands. Due to the significant variation in topography of the urban expansion area, pressure reducing valves and a booster pumping station have been implemented. The configuration of the water distribution system is illustrated on **Figure 4B**.

2.3 Local Watermains & Service Connections

The local water distribution system within the subdivision will consist of watermains ranging in diameter from 150mm to 300mm. This water system will connect to the trunk watermain.

In accordance with Township standards the individual detached dwellings are each to have separate water connections. Based on Ontario Building Code (OBC 2012) regulations (7.6.3.4.(1) and (5) and Table 7.6.3.4), the dwellings will be serviced with 25mm diameter water connections given that it is anticipated that the dwellings will each have more than 16 fixture units.

Water meters are to be purchased from the Township and will be installed in the basement of each dwelling with a remote readout device located on the exterior ground floor wall of the house. Generally, residential water meters are selected to be one size smaller than the water service and therefore 20mm x 25mm water meters will be installed.

The configuration of the site watermain is illustrated in **Figure 4A**. A copy of the Township standard water service connection and water meter details is included in **Appendix "A"**.

2.4 Fire Protection

The fire flow required for the proposed dwelling units was calculated using the criteria indicated in the *Water Supply for Public Fire Protection Manual*, 1999, by the Fire

Underwriters Survey (FUS). The calculation incorporates various parameters such as coefficient for fire-resistant construction, an area reduction accounting for a fire-resistant (one hour rating) protection, a reduction for low-hazard occupancies, and a factor for neighbouring building proximity.

The calculation was completed to reflect the governing conditions which are the largest detached dwelling and the largest interior townhouse unit. Based on the calculations, the minimum fire suppression flow required for the detached dwellings and the townhouse units is 5,000 L/min and 4,000 L/min respectively. The detailed fire flow calculation is shown in **Table A2-1** to **Table A2-2** of **Appendix "A"**. In accordance with the Township standards, this flow must be available at the nearest hydrant with a minimum pressure of 140 KPa.

Fire hydrants will be provided along the municipal roads such that a fire hydrant will be available within 90m of the principle entrance of each unit as set out in the Ontario Building Code (OBC 2012). A copy of the standard fire hydrant detail is included in **Appendix "A"**.

3.0 WASTEWATER SERVICING

The community of Millbrook is currently serviced by the existing Millbrook Wastewater Treatment Plant (WWTP) located at the east limit of Centennial Lane. This WWTP was built in 1975 and the plant was upgraded in 2004 to improve the treatment quality.

In May 2013 the Township of Cavan Monaghan completed a Class Environmental Assessment (Class EA) which investigated the alternatives to address concerns associated with the existing WWTP, in particular, the fact that it did not have sufficient capacity to sustain the projected growth. In addition, the existing plant is at the end of its useful life and requires substantial upgrade and rehabilitation. Based on a review of alternatives and a public consultation process it was determined that the preferred alternative is to expand and upgrade the existing Millbrook WWTP on the existing site and adjacent property. In 2015 the expansion and upgrade of the existing Millbrook WWTP was completed to include a high-level tertiary treatment facility that is able to provide improved effluent quality to meet the current effluent discharge criteria, as well as the increased capacity to accommodate future flows.

The location of the existing sanitary sewers and the WWTP is indicated in **Figure 5B**. The following is a summary of the wastewater servicing analysis for the subject site.

3.1 Wastewater Loading

The wastewater loading is to be calculated using the Township engineering design standards which include the following parameters:

Residential Average Daily Flow: 450 L/person/day

Residential Peaking Factor: $K_H = 1 + \frac{14}{4 + \sqrt{P}}$

Where: K_H = Harmon Peaking Factor
(Max. 4.0, Min. 2.75)
p = Population in thousands

Extraneous Flow, *I*: 0.14 L/s/Ha (Infiltration)

Design Flow, Q = $Q \times K_H + I$

Based on the above criteria the sewage flow calculations are provided in **Table B1** contained in **Appendix "B"** and the total flow is summarized in **Table 3**.

Table 3. Wastewater Loading Summary

Land Use	Area (Ha)	Equivalent Population (Persons)	Average Daily Flow (L/s)	Harmon Peaking Factor	Peak Daily Flow (L/s)	Infiltration Rate (L/s)	Total Flow (L/s)
Detached Dwellings	15.367	1,260	6.56	3.73	24.50	2.15	26.65
Street Townhomes	5.983	732	3.81	3.88	14.81	0.84	15.64
Apartments	2.680	384	2.00	4.00	8.00	0.38	8.38
Roads	8.944					1.39	1.39
TOTAL	**32.974**	**2,376**	**12.38**		**47.30**	**4.76**	**52.06**

3.2 External Sanitary Sewers

In accordance with the recommendations of the Class EA, a trunk sanitary sewer was constructed from the existing Millbrook community, along County Road 10, to service the urban expansion area including the municipal office, the existing Phase 1 lands, the subject Phase 2 lands and the future Phase 3 lands. Given the existing rolling topography of the area, the route was selected to minimize the depth of this 375mm diameter gravity sewer and to maximize the area that can be serviced by a gravity system.

The alignment of the trunk sanitary sewer is indicated in **Figure 5B**.

3.3 Local Sanitary Sewers & Service Connections

The subject site will be serviced by a local sanitary system consisting of 200mm diameter sewers which will discharge to the trunk sewer. The local sewer will be designed such that the upstream end of each length will have a minimum 1% slope to assist with self cleansing. In accordance with standard practice, manholes will be provided for maintenance access at a maximum spacing of 120m.

Each dwelling unit will be provided with a 100mm diameter single connection in accordance with Township standards.

4.0 STORM CONVEYANCE SYSTEM

The subject site is located in the Baxter Creek watershed which is one of the twelve watersheds under the jurisdiction of the Otonabee Region Conservation Authority (ORCA). Baxter Creek originates from the Oak Ridges Moraine and flows in an easterly direction and outlets into the

Otonabee River. Baxter Creek meets the Otonabee River approximately 20 km upstream of Rice Lake. A map illustrating the Baxter Creek watershed is contained in **Appendix "C"**.

In accordance with Township standards, a major / minor system storm conveyance concept has been incorporated into the functional servicing design for the subject development. The following sections provide a brief summary of the storm drainage components:

4.1 Minor System Design

As per the Township engineering design criteria, the proposed development is to be serviced with a minor storm sewer system that is designed to convey runoff from the 5-year storm event. The rainfall intensity values, *I*, are calculated in accordance with the 2014 rainfall intensity duration frequency (IDF) data for the Peterborough Airport weather station, obtained from Environment Canada. Based on this data the rainfall intensity for the 5- and 100-year rainfall events is calculated as follows:

$$I_5 = \frac{844}{(t+7.5)^{0.78}} \qquad I_{100} = \frac{1697}{(t+10.5)^{0.81}}$$

The peak flows are calculated using the following formula:

$Q = R \times A \times I \times 2.778$

where: Q = peak flow (L/s)
A = area in hectares (ha)
I = rainfall intensity (mm/hr)
R = composite runoff coefficient
t = time of concentration (min)

The proposed storm sewer will discharge to the proposed stormwater management facility (SWM pond) located in the north-west corner of the site.

The IDF curve data is included in **Appendix "C"**. A schematic design of the minor system is illustrated in on **Figure 6**.

4.2 Major System Design

The major system will generally be comprised of an overland flow route along the municipal road network directing drainage to a safe outlet. This major system will convey flows which are in excess of the capacity of the minor storm sewer system. The major system flow route is illustrated in **Figure 10**. Major flows will be captured at the low point on Street 'A' and conveyed to the SWM pond via the maintenance access road overland flow route.

4.3 Foundation Drainage

It is anticipated that the dwellings will have basements and therefore a foundation weeping tile system will be required. In accordance with Township standards, storm service connections are to be provided to each dwelling unit. A hydraulic grade line analysis of

the storm sewer system will be completed at the detailed design stage to ensure that basements are protected during the 100-year storm event.

4.4 Roof Drainage

It is anticipated that the proposed dwellings will have conventional peaked roof with eaves troughs and downspouts. As per standard practice the downspouts are to discharge to grade over splash pads, preferably towards sodded areas. Roof downspouts are not to be connected to the storm sewer.

4.5 Floodplain Analysis

The north part of the subject site is traversed by Tributary C of Baxter Creek which flows in an easterly direction before discharging under County Road 10. A second watercourse, Tributary B, traverses the site draining in a northeasterly direction joining Tributary C upstream of County Road 10. The following is a summary of the analysis completed related to these two watercourses.

4.5.1 Tributary C

The total upstream drainage area of Tributary C is 1,055.74 Ha (*Catchments 101-106*), as shown on **Figure 7**. In order to determine the extent of the Regulatory floodplain at this location, a HEC-RAS model was prepared and the Regulatory floodplain is delineated in **Figure 8**.

As indicated in **Figure 3**, the flood plain associated with Tributary C will be entirely contained within open space blocks and therefore the proposed lots are protected from flooding.

Supporting documentation, VO5 and HEC-RAS modelling output, and hydraulic calculations are provided in **Appendix "D"**.

4.5.2 Tributary B

An application was made to the Department of Fisheries & Oceans (DFO) to obtain approval for the re-alignment of Tributary B such that it would be directed around the subject development in the form of a channel. The proposed channelization has the benefit of resulting in an increase of 264 m of watercourse length with the entire section incorporating natural channel design features within a protected block whereas the existing watercourse passes through an agricultural field and has barriers to fish passage.

Based on the foregoing, the proposed channelization will result in a net gain of potential fish habitat. The DFO reviewed the proposal for the channelization and has confirmed that it will not result in serious harm to fish and therefore no formal approval is required from DFO. The DFO correspondence dated February 5, 2018 is included in **Appendix "D"**. The alignment of the proposed channel is indicated in **Figure 6**.

In order to determine the Regulatory flow through the subject site associated with Tributary B, the upstream drainage areas were delineated, and hydrologic modelling using Visual OTTHYMO 5.1 (VO5) was completed. The total upstream drainage area is 32.02 ha (*Catchment 107*, as shown on **Figure 7**)**.** Based on this analysis, it was determined that the Regional Storm (Timmins Storm) is the Regulatory Storm, with a peak flow of 2.511 cms at *Flow Node #6* (refer to **Table D.4** in **Appendix "D"**).

The SWM pond will discharge to the proposed channel at the northwest corner of the site. The uncontrolled Regional flow from the SWM pond (discharged via the emergency spillway) is 3.808 cms. The proposed channel must therefore convey a total flow of 6.319 cms (2.511 cms from upstream, plus 3.808 cms from the proposed development). The proposed channel will be 1.10 m deep, with an 11.00 m wide bottom, 3:1 side slopes and a minimum slope of 0.5%. Based on *FlowMaster* modelling of the proposed channel (refer to output in **Appendix "D"**), the Regional flow can be conveyed at a flow depth of 0.74 m (at a minimum 0.5% slope), resulting in a minimum freeboard depth of 0.36 m to the top of the channel. It is to be noted that the proposed channel will be construct entirely in cut, and that the channel will typically be deeper than the minimum 1.10 m depth required. The bottom of the channel will consist of a low-flow channel designed in accordance with geomorphic and natural channel design principles.

The flood plain associated with the Tributary B will be entirely contained within the proposed channel which will be located within an open space block. Based on the foregoing, the proposed lots will be protected from flooding.

Supporting documentation, VO5 and HEC-RAS modelling output, and hydraulic calculations are provided in **Appendix "D"**.

5.0 STORMWATER MANAGEMENT

5.1 Storm Drainage Areas

Based on the topographic survey and the proposed draft plan of subdivision, the following is a summary of the pre and post-development drainage areas.

5.1.1 Pre-Development

There is a tributary of Baxter Creek (Tributary C) that passes through the proposed development before it flows beneath County Road 10 via a 6.1 m by 2.44 mm concrete box culvert. The overall topography north of Fallis Line generally drains to the watercourse running through the middle of the site, which flows in a north-easterly direction. Elevations vary from 257.92 m adjacent the existing Township Office property north of Fallis Line, to approximately 233.78 m at the north-east corner of the site where the watercourse enters the culvert under County Road 10. The existing slopes range from 0.4% to approximately 12%.

The existing land use for the area that is to be developed is agricultural. **Figure 9** illustrates the drainage patterns for existing conditions.

5.1.2 Post-Development

The subject site will be developed into a residential subdivision, including a mix of single detached dwellings, street townhouses, high-density residential buildings, open space blocks and a SWM block. Drainage will be conveyed to the SWM pond via the storm sewer system, or overland via the road network to the low point adjacent to the SWM pond maintenance access road.

Discharge from the SWM pond will be released to the proposed channel, which will in turn discharge to the existing channel immediately upstream of County Road 10. **Figure 10** illustrates the details of the proposed drainage plan for the subject site.

The lots fronting Fallis Line (*Catchment 206*) will drain to the Fallis Line storm sewer and be conveyed to the Millbrook Subdivision, Phase 1 SWM pond. This area has been accounted for as part of the Phase 1 SWM pond design (*Stormwater Management Report, Millbrook Subdivision, Phase 1*, Valdor Engineering Inc., October 2016).

The eastern portion of the community centre (*Catchment 208*) will be serviced by a storm sewer that will capture the minor system flows (up to and including the 5-year event) and convey flows to the existing culvert under County Road 10. The major system flows (the 100- minus 5-year flows) will discharge overland to the SWM pond. Further details on the SWM design for this site is provided in the *Stormwater Management Report, Proposed Community Centre, Community of Millbrook* (Valdor Engineering Inc., 28 November 2017).

5.2 Stormwater Management Design Criteria

The proposed SWM facility shall be designed to provide the following levels of control as per the requirements of the Ministry of the Environment (MOE), Otonabee Region Conservation Authority (ORCA) and Township of Cavan Monaghan:

- **Quality control**: The permanent pool shall be sized to provide Enhanced (Level 1) treatment of stormwater runoff for the proposed development.
- **Erosion control**: Stormwater runoff from the 25 mm storm event shall be stored and released over a minimum 24-hour period.
- **Flood control**: Flood storage and control shall be provided to maintain peak outflows from the pond at or below pre-development levels for the critical of the 6, 12 & 24-hour SCS, the 6, 12 & 24-hour AES, and the 4-hour Chicago storm distributions, for the 2-yr through 100-yr design storm events.

5.3 Stormwater Management Pond Design

A SWM facility is proposed to serve the subject site. The total service area for the SWM facility is approximately 39.53 ha (including *Catchment 208*). The proposed SWM pond is

located at the north-west corner of the proposed development, as illustrated in **Figure 10**. The configuration of the SWM Pond is illustrated in **Figure 11**.

Per the Township standards, MOE SWM pond criteria and recommendations in the geotechnical report, the SWM pond design includes 5H:1V side slopes, a 4.0 m wide maintenance access road to the headwalls and control structure, and access to the bottom of the forebay with a maximum 10% slope.

5.3.1 Quality Control

Various source controls, conveyance and end-of-pipe SWM facilities were considered to provide the appropriate level of stormwater quality control. Reduced lot grades, rear and side yard swales, and discharge of roof leaders to pervious surfaces will augment the control provided by the SWM facility and promote infiltration where possible. Based on a preliminary review of available controls, it appears that the primary and most effective option to provide water quality control for runoff from the contributing drainage areas is a SWM facility. The options reviewed are as follows:

- Roof Leader to Ponding Areas or Soakaway Pits (Lot Level): The Township design criteria do not address the use of ponding areas or soakaway pits in the rear yards. Roof leaders will discharge directly to pervious surfaces to encourage infiltration and filtration on the lots. Soakaway pits can be an effective means of improving infiltration of stormwater, but require a large area in comparison to typical residential rear yard dimensions. As a result, soakaway pits and ponding areas are not recommended.
- Grassed Swales (Conveyance): Rear and side yard swales will be incorporated into the grading plan. The swales will convey runoff to rear lot catch basins. The number of rear lot catch basins will be minimized in order to encourage infiltration via swales.
- Stormwater Management Facilities (End-of-Pipe): Based on discussions with the ORCA, SWM facilities are required to provide water quality, extended detention and flood control of stormwater runoff. Stormwater management facilities will be constructed within the subject property.
- Oil/Grit Separation Technologies (End-of-Pipe): These SWMF's can be effective for smaller, high impervious sites where spill protection is desired and when area for a stormwater pond is unavailable. The construction of the stormwater pond will eliminate the need for any oil/grit separation units.
- Infiltration Trenches/Basins (End-of-Pipe): These SWMF's are most effective in areas with highly pervious soils and large areas.

In accordance with the ORCA requirements for development within the Baxter Creek watershed, Enhanced (Level 1) water quality protection shall be provided by the proposed SWM facility.

The total drainage area to the SWM pond for quality control purposes is 37.75 ha (not including *Catchment 208* for which the minor system drainage is not conveyed to the SWM pond). Based on a total average imperviousness of 66.0%, the required permanent pool volume is provided below.

SWM Pond Permanent Pool Volume Calculation

Volume required for catchment with 66.0% imperviousness:	215.7	m^3/ha
Less 40 m^3/ha of extended detention storage zone:	- 40.0	m^3/ha
Permanent Pool Volume Required:	175.7	m^3/ha

The permanent pool storage volume required for the Pond is 175.7 m^3/ha × 37.75 ha = 6,631 m^3.

In order to maintain a permanent pool of water in the pond and to prevent the mixing of surface water with ground water, the pond must be constructed in native, undisturbed till material or lined with either an imported clay material or synthetic material. A review of the Geotechnical Investigation Report for the site indicates that the native soils are till (clayey silty sand with gravel) based on Test Pits #31 & 36, which was drilled in the location of the proposed SWM pond. The preliminary geotechnical investigation indicates that this native material re-compacted would be too permeable to use as a SWM pond liner, but that native, undisturbed till may have a low enough permeability to be used as a pond liner. It is assumed that a pond liner will be required, but this will be confirmed at detailed design.

The normal water level of the permanent pool for the pond is set at an elevation of 241.50 m. The bottom of the pond is set at an elevation of 239.50 m, providing a permanent pool depth of 2.00 m in the forebay and main cell. The actual permanent pool storage volume provided is approximately 6,981 m^3 which is greater than the minimum required volume (6,463 m^3). The required and provided quality control volume together with the elevation of the normal water level are summarized in **Table 5**.

The forebay has been sized based on MOE design criteria and supporting calculations are provided below.

Forebay Sizing Calculations

The proposed forebay is approximately 65 m in length and 23 m in average width, on average. The resultant length-to-width ratio is therefore 2.8:1. Using the methodology provided in the *Stormwater Management Planning and Design Manual*, the recommended forebay length based on particulate settling is calculated using the following expression:

$$Dist = \sqrt{\frac{r \cdot Q_p}{V_s}} \qquad [1]$$

where: *Dist* is the forebay length (m)
r is the length-to-width ratio of the forebay (2.8:1 or *r* = 2.8)

Q_p is the pond's peak discharge (0.047 m^3/s, OTTHYMO modelling of 25 mm storm)
V_s is the settling velocity (0.0003 m/s for 150 µm particles)

Solving [1] gives:

$$Dist = \sqrt{\frac{2.8 \times 0.047}{0.0003}} = 20.9\ m$$

The recommended forebay length based on flow dispersion calculations is calculated using the following expression:

$$Dist = \frac{8 \cdot Q}{d \cdot V_f}, \qquad [2]$$

where: *Dist* is the forebay length (m)
Q is the peak inlet flow (4.662 m^3/s, OTTHYMO modeling of 5-year storm)
d is the depth of the permanent pool in the forebay (2.00 m)
V_f is the desired velocity in the forebay (0.50 m/s)

Solving [2] gives:

$$Dist = \frac{8 \times 4.662}{2.00 \times 0.50} = 37.3\ m$$

The distance from the headwall to the forebay berm is 65 m. The proposed design therefore satisfies the minimum forebay length recommendations.

The minimum recommended forebay bottom width is calculated as follows, based on the maximum distance from the calculations above:

$$Width = \frac{Dist}{8} = \frac{37.3}{8} = 4.7\ m$$

The design proposes an average forebay bottom width of approximately 7 m, which satisfies this criterion.

5.3.2 Erosion Control

In accordance with the ORCA guidelines, erosion control shall be provided using an extended detention active storage zone sized to capture the runoff resulting from a 25 mm rainfall event and to release the runoff over a period of at least 24 hours. Based on the VO5 modelling of this storm condition (i.e. the 25 mm 4-hour Chicago storm distribution), the estimated runoff volume is 13.58 mm distributed over the 37.75 ha catchment area draining to the SWM pond (excludes *Catchment 208*) for a required erosion control volume of 5,126 m^3.

Based on the design for the SWM pond, the erosion control volume provided is 5,443 m^3 at an elevation of 242.30 m. This exceeds the required erosion control volume of 5,126 m^3 for the pond. The proposed extended detention depth is 0.80 m, which is less than the maximum recommended extended detention depth of 1.00 m.

The extended detention function of the pond will be controlled with a 170 mm diameter orifice plate (*Orifice #1*) located in the box manhole control structure to achieve the minimum required drawdown time of 24 hours (48 hours is considered preferable).

The drawdown time can be calculated using the following expressions, from the *Stormwater Management Planning and Design Manual*:

$$t_d = \frac{0.66 \cdot C_2 \cdot h_1^{1.5} + 2 \cdot C_3 \cdot h_1^{0.5}}{2.75 \cdot A_o} \quad [3]$$

where: t_d is the drawdown time (s)
h is the maximum water elevation above the orifice (0.80 m)
A_o is the cross-sectional area of the orifice (0.0227 m^2)
C_2 is the slope coefficient from area-depth linear regression (2805.6)
C_3 is the intercept from area-depth linear regression (5713.0)

The variable *h* is the maximum water elevation above the centroid of the orifice and is calculated as follows (invert of orifice set at normal water level):

$$h_1 = HWL_{25mm} - \left[NWL + \frac{D}{2}\right] = 242.30 - \left[241.50 + \frac{0.170}{2}\right] = 0.715\ m$$

where: HWL_{25mm} is the high water level for the 25 mm rainfall (242.30 m)
NWL is the normal water level (241.50 m)
D is the diameter of the orifice (0.170 m)

Solving [3] yields:

$$t_d = \frac{0.66 \times (2805.6) \times (0.715)^{1.5} + 2 \times (5713.0) \times (0.715)^{0.5}}{2.75 \times (0.0227)} = 172{,}704\ s = 48.0\ hrs$$

The orifice size, erosion control release rate, draw down time, extended detention volume and water level are summarized in **Table 5**.

5.3.3 Quantity Control

As per the ORCA and the Township's standards, the SWM facility shall be designed to control the post-development peak flow to pre-development levels for the 2-year through 100-year design storms and to safely convey the greater of the uncontrolled 100-year or Regional flow.

A critical storm analysis was completed to determined which storm distribution (based on the latest Peterborough Airport IDF data for 1971-2006 obtained from Environment Canada) requires the largest storage volume to achieve pre-development target flow rates. Based on the results provided in **Table E.9** (refer to **Appendix "E"**), the 6-hour SCS storm was identified as the critical storm requiring the largest storage volume to achieve the 100-year flow control.

The preliminary rating curve is provided in **Table E.5** (refer to **Appendix "E"**), and consists of a box manhole control structure with a 0.60 m wide by 0.70 m high rectangular orifice (*Orifice #2*) cut into the wall of the box manhole.

Table 4 shows the VO5 modelling results for each development condition based on the 6-hour SCS storm distribution, and **Table 5** shows the SWM facility performance characteristics for each return period event based on the preliminary rating curve.

The SWM pond has been designed with a total active storage volume of 17,139 m^3 at an elevation of 243.50 m. The expected maximum storage required during 100-year storm conditions is approximately 16,718 m^3. The provided active storage is therefore sufficient.

As shown in **Table 4**, the peak discharge rates are equal to or less than the target release rates. Supporting documentation (**Tables E.1-4**) and output from the VO5 modelling is provided in **Appendix "E"**.

Table 4. Summary of Storm Drainage Peak Flows - Flow Node #1

Return Period	Existing Peak Flows (m^3/s)	Proposed Peak Flow (m^3/s)
25mm Chicago	-	0.109
2-year	0.490	0.232
5-year	0.908	0.525
10-year	1.224	0.761
25-year	1.654	1.077
50-year	1.992	1.283
100-year	2.344	1.461

5.3.4 Thermal Mitigation Measures

Mitigation measures shall be incorporated into the SWM pond design to minimize thermal impacts to the receiving watercourse. These measures include a bottom draw pipe and a planting strategy to promote shading along the pond perimeter.

Bottom Draw Pipe

Instead of the common perforated riser configuration, a bottom draw pipe will be implemented for the extended detention component to discharge water from the deepest section of the pond where the water temperature is lowest. This outlet consists of a submerged intake headwall and a bottom draw pipe which discharges via an orifice plate in the quality control structure. Given that this pipe is sized for frequent rainfall events (25mm storm), it will provide the greatest benefit to the thermal regime of the receiving watercourse.

Planting Strategy

In accordance with the Township and ORCA requirements the SWM facility will be planted to provide a natural appearance and to provide environmental benefits. The landscape plan will specify shade producing species to minimize solar heating of the permanent pool during summer months. The forebay design provides additional pond perimeter where shade producing vegetation can be planted.

5.3.5 SWM Pond Inspection & Maintenance

The stormwater management facility should be inspected periodically to determine the frequency of maintenance activities. As such, maintenance activities will be performed on an as-required basis. During the first two years of operation, it is recommended that the stormwater management facility be inspected following significant storm events to determine if and when maintenance activities are required. Subsequently, inspections should be carried out twice per year. The following items should be considered when inspecting the pond:

- Sediment accumulation to determine cleanout requirements;
- Erosion of side slopes and outfall channel;
- Safety hazards;
- Hydraulic operation of the pond;
- Drawdown time following a rainfall event (extended drawdown time greater than 48 hours may indicate a blocked orifice or intake);
- Condition of terrestrial and aquatic vegetation;
- Trash accumulation near hydraulic structures; and
- Surface sheen indicating possible oil contamination.

Table 5: Stormwater Facility Performance Summary

Quality Control		
	Protection Level	Level 1 (Enhanced)
	Permanent Pool Required (m^3)	6,631
	Permanent Pool Provided (m^3)	6,981
	Normal Water Level, NWL (m)	**241.50**

Erosion Control		
25mm Chicago	Orifice Size (mm)	170
	Draw Down Time (hrs)	48.0
	Flow In (m^3/s)	1.566
	Flow Out (m^3/s)	0.047
	Storage Used (m^3)	4,629
	Pond W.S. Elevation (m)	**242.20**

Quantity Control (6-hour SCS)		
2-year	Flow in (m^3/s)	3.063
	Flow Out (m^3/s)	0.162
	Storage Used (m^3)	7,191
	Pond W.S. Elevation (m)	**242.51**
5-year	Flow in (m^3/s)	4.662
	Flow Out (m^3/s)	0.381
	Storage Used (m^3)	9,430
	Pond W.S. Elevation (m)	**242.76**
10-year	Flow in (m^3/s)	5.715
	Flow Out (m^3/s)	0.569
	Storage Used (m^3)	11,010
	Pond W.S. Elevation (m)	**242.92**
25-year	Flow in (m^3/s)	7.344
	Flow Out (m^3/s)	0.822
	Storage Used (m^3)	13,133
	Pond W.S. Elevation (m)	**243.13**
50-year	Flow in (m^3/s)	8.451
	Flow Out (m^3/s)	0.970
	Storage Used (m^3)	14,829
	Pond W.S. Elevation (m)	**243.29**
100-year	Flow in (m^3/s)	9.706
	Flow Out (m^3/s)	1.088
	Storage Used (m^3)	16,718
	Pond W.S. Elevation (m)	**243.46**
Regional Storm (Timmins)	Flow in (m^3/s)	3.808
	Flow Out (m^3/s)	3.602
	Storage Used (m^3)	18,498
	Pond W.S. Elevation (m)	**243.62**

5.4 Site Water Balance

In accordance with the requirements of the ORCA, a site water balance assessment was completed for the entire subject property to determine the overall infiltration deficit under proposed conditions and to design infiltration facilities as part of an overall mitigation strategy to maintain pre-development infiltration volumes. Data for the assessment was obtained from soil mapping obtained from the Ontario Soil Survey mapping for Durham County, satellite imagery, the Stormwater Management Planning and Design Manual (Ministry of the Environment, March 2003) and the Geotechnical Investigation Report for the site. These documents provide information with respect to the groundwater table level, soil types and soil infiltration rates. The following sections detail the methodology, volume calculations and proposed infiltration mitigation measures necessary to achieve a post-development site infiltration balance.

5.4.1 Methodology

The approach for estimating water balance volumes is based on the method described in the Stormwater Management Planning and Design Manual (MOE, 2003). The assessment was completed for the site using soils and land use information to calculate weighted evapotranspiration values. Weighted water surplus volumes were then calculated and a weighted infiltration factor was calculated. Surplus volumes were then split into runoff and infiltration components for existing and proposed conditions.

With regards to land use, the analysis reflects existing conditions which is described as predominantly agricultural, with pockets of pasture and shrub areas. The proposed land use is primarily residential with the pervious component being limited to the lawn areas. The proposed bypass channel and open space blocks will also consist of lawn areas, and a portion of the existing pasture and shrub areas will remain undeveloped.

The assumed hydrologic soil group (HSG) for the site was based on a review of soils mapping, which showed the predominant soil type within the subject development to be HSG “B”. Under proposed conditions, it is assumed that existing soils will be used in the grading of the proposed development and therefore HSG “B” soils were also assumed for the site under proposed conditions. The existing site soils were assumed to have a 30 mm/hr percolation rate for the sizing of the infiltration trench maximum depth. It is recommended that a percolation rate be provided by the geotechnical consultant at detailed design to confirm the maximum allowable infiltration trench depth.

The water balance calculations including the infiltration factor selection, rainfall analysis and evapotranspiration analysis are provided in **Table F.1** to **Table F.4** which are contained in **Appendix “F”**.

5.4.2 Existing Conditions Water Balance Volumes

The pre-development baseline site infiltration condition was calculated using the Peterborough Airport Climate Normal data (1981–2010) from Environment Canada and the current land cover and land use pattern. Based on the MOE Infiltration Factor

Method, the calculated infiltration factor for the site under existing conditions was 0.510. The calculations indicate that the existing annual surplus is 143,480 m^3 and the annual infiltration capacity is 73,175 m^3. The results of the annual water balance analysis for the existing condition are presented in the first row of **Table F.1**. The pre-development water balance conditions are illustrated in **Figure 12**.

5.4.3 Post-Development Unmitigated Water Balance Volumes

Under post-development conditions and without implementing any infiltration mitigation measures, it is estimated that approximately 43,690 m^3 of water will infiltrate the ground. This represents 59.7% of the existing infiltration volume. The notable reduction in infiltration volume is the result of an increase in the impervious area associated with the proposed development. The results of the annual water balance analysis for the proposed condition, with no infiltration best management practices, are presented in the second row of **Table F.1**. Therefore, mitigation measures are necessary to achieve the site infiltration water balance.

5.4.4 Site Infiltration Mitigation Measures

In order to minimize the impact of development on the future water balance for the site, infiltration mitigation measures will be promoted and incorporated within the proposed development. These measures include basic and enhanced best management practices (BMPs) as follows:

Basic Best Management Practices

The following basic BMPs are to be implemented on the subject site:

- Roof down spouts of the dwellings will be directed to pervious lawn areas and grassed swales where feasible to promote infiltration;
- Where applicable, grassed swales will be constructed along side and rear lot lines;
- Where possible, the fine grading of lots will be completed with an extra depth of topsoil to encourage infiltration and absorption.

Under proposed conditions with the implementation of the above basic infiltration BMPs, approximately 51,689 m^3 of water will infiltrate the ground which equates to approximately 70.6% of the pre-development infiltration volume. The third row of **Table F.1** provides the summary of the calculations for the post-development condition with basic infiltration BMPs.

Enhanced Best Management Practices

In an effort to better match the existing infiltration volumes, enhanced infiltration BMPs in the form of infiltration trenches are required. These measures will serve to further promote the infiltration of runoff from the proposed development.

Through the implementation of the proposed infiltration trenches, the annual infiltration capacity can increase by 21,872 m^3. As a result, the post-development infiltration volumes for the site will be 73,562 m^3, which is 100.5% of the pre-development volume. Based on the water balance calculations completed, a minimum drainage area of 7.88 ha, including rear yard and roof areas, will need to be directed to the proposed infiltration trenches to achieve the required annual infiltration volume. The proposed infiltration trench design, consisting of both rear lot catch basin (RLCB) infiltration trenches and rear-of-lot infiltration trenches (built along the back of lots backing onto the open space blocks) will capture runoff from a total drainage area of 8.40 ha, meeting the minimum drainage area requirement.

The proposed infiltration trenches will be lined with filter fabric, filled with 50mm diameter clear stone and will be designed to overflow into the storm sewer, or sheet flow to the open space blocks, once the storage capacity of the trench is exceeded.

At the detailed design stage it will need to be confirmed that the seasonal high groundwater level is a minimum of 1.0 m below the bottom of the proposed infiltration trenches. If there are challenges meeting the required infiltration trench length at detailed design, then the design of the SWM pond could be modified to incorporate a proposed infiltration trench at the pond outlet, subject to input from the geotechnical engineering consultant. Specific sizing details for the proposed infiltration trenches will also be provided at detailed design. A summary of the infiltration trench sizing is included in **Table F.6**. A copy of a typical infiltration trench detail is included in **Appendix "F"**. The location of the infiltration trenches are illustrated in **Figure 13**.

6.0 VEHICULAR & PEDESTRIAN ACCESS

The layout of the proposed subdivision has been developed with consideration for efficient and safe access and circulation of both vehicular and pedestrian traffic.

6.1 Municipal Roads

The subject site has a frontage on both Fallis Line and on County Road 10. Fallis Line is an original 20.0m wide concession road which is operated and maintained by the Township. This municipal road allowance consists of a two lane rural paved road with roadside ditches. County Road 10 is an arterial road which is under the jurisdiction of the County of Peterborough. This road consists of a rural cross section having two lanes with partially paved shoulders and road side ditches.

The vehicular access to the subdivision will be facilitated by two connections being the intersections of Street 'B' and Street 'I' with Fallis Line. These intersections align with Highlands Boulevard and Bromont Drive, respectively, which were constructed in conjunction with the servicing of the Phase 1 lands. Road access will also be provided to County Road 10 with a new intersection to be constructed north of the municipal office.

Street "B" will loop through the subdivision from Fallis Line to County Road 10 and will be in the form of a 20m wide road allowance. The balance of the streets in the subdivision will be in the form of 18.0m road allowance with 8.5m pavement width. The proposed roads will have urban sections having pavement crowned with a 2.0% cross fall and edged

with concrete curb and gutter. The longitudinal slope of the road will generally be 0.50% with some length of road ranging up to 5% slope.

Based on the recommendations contained in the Geotechnical Investigation Report for the site, the recommended minimum pavement structure for the proposed roads is as follows:

Municipal Roads

Material	Compacted Depth
HL3 Surface Course Asphalt	40mm
HL8 Base Course Asphalt	50mm
Granular "A"	150mm
Granular "B"	300mm

6.2 Driveways

Each dwelling will have an attached garage and driveway. The recommended pavement structure for the residential driveways is as follows:

Driveways

Material	Compacted Depth
HL3 Surface Course Asphalt	40mm
Granular "A"	150mm

The residential driveways will be either single or double car width. The slope of driveways is to be within the range of 1.0% to 7.0% in accordance with Township criteria.

6.3 Sidewalks, Walkways & Trails

Internal pedestrian access will be provided by standard 1.5m wide concrete sidewalks to safely guide residents through the subdivision for access to the park, community centre and the adjacent planned sidewalks in the existing road allowances. Sidewalks will be generally constructed on one side of each road. A copy of the standard sidewalk details are included in **Appendix "G"**.

7.0 GRADING

As is typical will all subdivision, earthmoving is required, to varying degrees, in order to achieve the municipal design criteria and accommodate the development form.

7.1 Grading Criteria

The subject site is to be graded in accordance with the Township grading criterion which dictates that road grades are to range from 0.5% to 5.0% and that sodded yard areas are to range from 2.0% to 5.0%. For large grade differentials, a maximum slope 3H : 1V can be used for sodded embankments. In areas where space is limited, retaining walls can be utilized to accommodate grade differentials, however, their use should be minimized.

7.2 Preliminary Design

Based on the topographic survey, the proposed subdivision configuration and the Township's criteria, a preliminary grading design has been prepared. The preliminary grading design, considered the following factors:

- Achieve the Township's lot grading criteria.
- Meet the Township's vertical road design parameters.
- Minimize the requirement for retaining walls.
- Match existing grades along the adjacent properties and road allowances.
- Grading along existing road allowances is to have consideration for their future urbanization and grades are to be established to accommodate future boulevard slopes in the range of 2 to 4%.
- Provide an overland flow route to direct drainage to a safe outlet.
- Provide sufficient cover over the sanitary sewer.

An analysis of the earthworks will be conducted using digital terrain modelling software at the detailed design stage to optimize the cut and fill volumes in an effort to achieve a balance. Based on the preliminary design presented in **Figure 14**, no significant difficulties are anticipated in achieving the municipal grading design standards. It is anticipated that the lots will generally be split draining and the lots along the north, east and west limits of the site will be basement walk-out type lots. Due to grading constraints associated with the required minimum cover over the sanitary sewer at the north east corner of the site, a retaining wall will be required along County Road 10.

7.3 Permitting

A review of the Regulation Mapping indicates that the subject site is located within an area that is regulated by the ORCA. A grading permit is therefore required from their office under Ontario Regulation 166/06 prior to commencing topsoil stripping and earthworks. The permit application should be submitted in conjunction with the detailed design at the subdivision engineering stage.

8.0 EROSION & SEDIMENT CONTROL DURING CONSTRUCTION

Construction activity, especially operations involving the handling of earthen material, dramatically increases the availability of particulate matter for erosion and transport by surface drainage. In order to mitigate the adverse environmental impacts caused by the release of silt-laden stormwater runoff into receiving watercourses, measures for erosion and sediment control are required for construction sites. This is an extremely important component of land development that plays a large role in the protection of downstream watercourses and aquatic habitat. It is of particular concern for this site given the presence of a wetland and the proposed South SWM Pond in its vicinity.

The impact of construction on the environment is recognized by the Greater Golden Horseshoe Area Conservation Authorities. In December 2006 they released their document titled Erosion & Sediment Control Guidelines for Urban Construction (ESC Guideline). This document provides guidance for the preparation of effective erosion and sediment control plans.

Control measures must be selected that are appropriate for the erosion potential of the site and it is important that they be implemented and modified on a staged basis to reflect the site activities. Furthermore, their effectiveness decreases with sediment loading and therefore inspection and maintenance is required. The selection, implementation, inspection and maintenance of the control features are summarized as follows:

8.1 Control Measures

On relatively large sites, measures for erosion and sediment control typically include the use of sediment control basins, silt fencing, a mud mat and sediment traps. The following is a description of the sediment controls to be implemented on the subject site:

- **Temporary Sediment Control Basins** are commonly used to clarify silt-laden stormwater runoff by promoting sedimentation of the suspended particles in the runoff through long detention times. The proposed SWM pond will be utilized as temporary sediment control basins during construction. The basin is to be sized in accordance with the ESC Guideline based on a required storage volume of 250 m^3 per hectare of disturbed area (125 m^3/ha of permanent pool and 125 m^3/ha of active storage). The basin's outlet is to have a Hickenbottom riser and a minimum 75mm diameter orifice plate sized to provide a drawdown time in the order of 48 hours.
- **Silt Fences** are to be installed adjacent to all property limits subject to drainage from the development area prior to topsoil stripping and in other locations, such as at the bases of topsoil stockpiles. It is recommended that earthworks not extend immediately adjacent to the silt fence and instead 1m to 2m vegetated buffer be maintained for additional protection. The silt fences are to be constructed with 150 x 150mm wire farm fence fabric to properly support the geotextile. Heavy duty silt fence is recommended to be installed adjacent the South Wetland consisting of two rows of fence with a row of staked straw bales between.
- **Mud Mat** is to be installed at the construction entrance prior to commencing earthworks to minimize the tracking of mud onto municipal roads.
- **Sediment Traps** are to be installed at all catchbasin locations once the storm sewer system has been constructed to prevent silt laden runoff from entering.
- **Rock Check Dams** are to be constructed in swales and ditches to reduce velocities and trap sediment.

A set of Erosion and Sediment Control Plans are to be prepared at the detailed engineering design stage to reflect the various construction stages. Details of typical erosion and sediment control measures are included in **Appendix "I"**.

8.2 Construction Sequencing

The following is a summary of the scheduling of construction activities and the related implementation of sediment controls:

Stage 1 – Subdivision Earthworks

1. Construct mud mat for temporary construction access.
2. Install primary silt fencing around the limits of grading and secondary silt fencing along the south limit of the work area adjacent the existing wetland.
3. Install temporary swales and rock check dams.
4. Excavate and construct the temporary sediment basins including installation of hickenbottom drain and spillway and connect to temporary swales.
5. Strip any remaining topsoil, stockpile where indicated and install silt fence around the perimeter.
6. Constructed the channel including natural channel features and stabilize the channel. Upon completion, divert flow to the new channel.
7. Rough grade the site by placing cut material in fill areas and spreading and compacting of imported fill. Maintain the mud mat to minimize the tracking of silt onto the municipal road and provide street sweeping as necessary.

Stage 2 – Subdivision Servicing & Road Construction

1. Install underground servicing, covering the end of the pipe at the end of each work day to ensure that silt does not enter the storm sewer.
2. Construct roads, install sediment controls on catchbasins and install temporary hickenbottom drains at low point of lot blocks.

Stage 3 – House Construction

1. Construct houses and maintain all sediment controls including regular street sweeping and catchbasin cleaning.
2. Stabilize all lot surfaces as soon as possible after completion of the houses.
3. Remove silt fencing on a phased basis as areas are stabilized.

8.3 ESC Inspection & Maintenance

In order to ensure that the erosion and sediment control measures operate effectively, they are to be regularly monitored and they will require periodic cleaning (e.g., removal of accumulated silt), maintenance and/or re-construction.

Inspections of all of the erosion and sediment controls on the construction site should be undertaken with the following frequency:

- On a weekly basis
- After every rainfall event
- After significant snow melt events
- Prior to forecasted rainfall events

If damaged control measures are found they should be repaired and/or replaced within 48 hours. Site inspection staff and construction managers should refer to the Erosion and Sediment Control Inspection Guide (2008) prepared by the Greater Golden Horseshoe

Area Conservation Authorities. This Inspection Guide provides information related to the inspection reporting, problem response and proper installation techniques.

9.0 UTILITIES

While some external upgrades may be necessary by the utility providers, it is anticipated that utilities such as electrical (Hydro One Networks Inc.), natural gas (Enbridge Gas Distribution Inc.) and telecommunications (Nexicom Inc.) will be available to service the subject development similar to the utility servicing in Phase 1. As per standard practice in subdivisions, utilities will be installed underground. Co-ordination with the Hydro One and the various utility companies will be undertaken at the detailed engineering design stage to determine appropriate locations for pedestals, transformers and street lights.

It is recommended that the utility installation be in the form of a joint trench. The process of joint trenching allows all of the utility companies to co-ordinate the placement of their lines in a common trench excavated by a single utility contractor. Joint trenching maximizes the efficiency of the available area in the utility corridor and provides for a safe installation.

In accordance with the Township requirements, street lights will be LED. The street lights will have black octagonal poles with black post top luminaires similar to those installed in the Phase 1 subdivision.

A copy of a typical joint trench detail is included in **Appendix "J"** together with a detail of the street light.

10.0 SUMMARY

Based on the analysis contained herein, the proposed residential subdivision can be adequately serviced with full municipal services (watermain, wastewater and storm) in accordance with the standards of the Township of Cavan Monaghan, the County of Peterborough and the Otonabee Region Conservation Authority design criteria and consists of the following:

Water

- The community of Millbrook is currently serviced by a well based water system with a treatment plant and water storage tank. A 300mm diameter trunk watermain was constructed northerly along County Road 10 with a water tower and booster station located on the site of the municipal offices.
- A local water distribution system will be constructed along the roads to provide domestic supply and fire protection for the proposed dwellings. This local system will connect to the existing 300mm diameter watermains on Fallis Line and County Road 10. Based on the Ontario Building Code (OBC 2012) requirements, the water service connections for the individual townhouse units are to be 25mm diameter.

Waste Water

- The community of Millbrook is currently serviced by the existing Millbrook Wastewater Treatment Plant (WWTP) located at the east limit of Centennial Lane.
- A 375mm diameter trunk sanitary sewer was constructed in conjunction with the servicing of the Phase 1 subdivision and includes a sewer along Fallis Line extending up to the municipal office.
- A local sanitary sewer system will be constructed along the proposed roads to provide service to the dwellings. In accordance with Township standards, the dwellings will be serviced with individual sanitary connections.

Storm Drainage

- The subject site is located in the Baxter Creek subwatershed. The Baxter Creek drains to the Otonabee River which discharges to Rice Lake.
- In accordance with Township criteria, the subject site will be serviced by minor system comprised of a municipal storm sewer sized for the 5-year storm event. This storm sewer will outlet to the proposed SWM facility.
- The major system will be comprised of an overland flow route which will convey runoff from rainfall events in excess of the capacity of the municipal storm sewer to the SWM facility.
- The Regulatory floodplain of Tributary C of Baxter Creek is contained entirely within the valley lands and therefore the proposed residential lots and the stormwater management pond are outside the Regulatory floodplain.
- Tributary B will be re-aligned around the perimeter of the subject site in the form of a channel incorporating natural channel design features. This channel has been sized to accommodate the Regional flow and will be contained within an opens space block. Based on the foregoing, the residential lots will be outside the Regional floodplain

Stormwater Management

- A stormwater management facility will be constructed to service the subject property. This facility has been designed as a wet pond to provide Enhanced (Level 1) water quality treatment, extended detention for erosion control and flood control using the calculated pre-development flow targets up to and including the 100-year storm event. The wet pond consists of a sediment forebay and a main cell separated by a forebay berm.
- Thermal mitigation measures are to be incorporated in the design of the pond including bottom draw pipe and a planting strategy to provide shading around the pond perimeter.
- A site water balance assessment has been undertaken to ensure that pre-development infiltration volumes are maintained. Based on the analysis it was determined that mitigation measures are required in the form of infiltration trenches.

Vehicular & Pedestrian Access

- Vehicular access to the subject site will be provided by two road connections to Fallis Lane and one road connection is County Road 10.
- The proposed local roads will be constructed to urban standards having an 8.5m pavement width. The main road (Street “B”) which loops from Fallis Line to County Road 10 will have a 20m road whereas the balance of the proposed roads in the subdivision will have 18m road allowances.
- Pedestrian access will be provided by 1.5m wide concrete sidewalks which are to be generally located on one side of each road.

Grading

- As is typical with large subdivision projects, earthmoving will be required to achieve the proposed subdivision grading necessary to meet the criteria of the Township. A detailed analysis of the earthworks will be conducted at the detailed design stage to optimize the cut and fill volumes. Based on the preliminary design, no significant difficulties are anticipated in achieving the municipal grading design standards.
- Since the subject site is located in an area which regulated by the ORCA, a permit will be required from their office prior to commencing earthworks.

Erosion & Sediment Control During Construction

- Erosion and sediment control (ESC) measures are to be implemented during construction to prevent silt laden runoff downstream in accordance with the Erosion & Sediment Control Guidelines for Urban Construction (December 2006). The ESC plans are to be prepared at the detailed engineering design stage and are to reflect the various construction stages.

Utilities

- Similar to the Phase 1 subdivision, utility servicing will include an underground joint utility trench for electrical, natural gas and telecommunications. Street lighting will be LED and will be comprised of black octagonal poles with black post top luminaires.

Subdivision Engineering Design

- Detailed design for the proposed development is to be prepared at the subdivision engineering stage. This detailed design is to include servicing and grading plans as well as a stormwater management report based on the criteria established in this Functional Servicing Report.

11.0 REFERENCES & BIBLIOGRAPHY

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Respectfully Submitted,

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MILLBROOK SUBDIVISION
PHASE 2

LOCATION MAP

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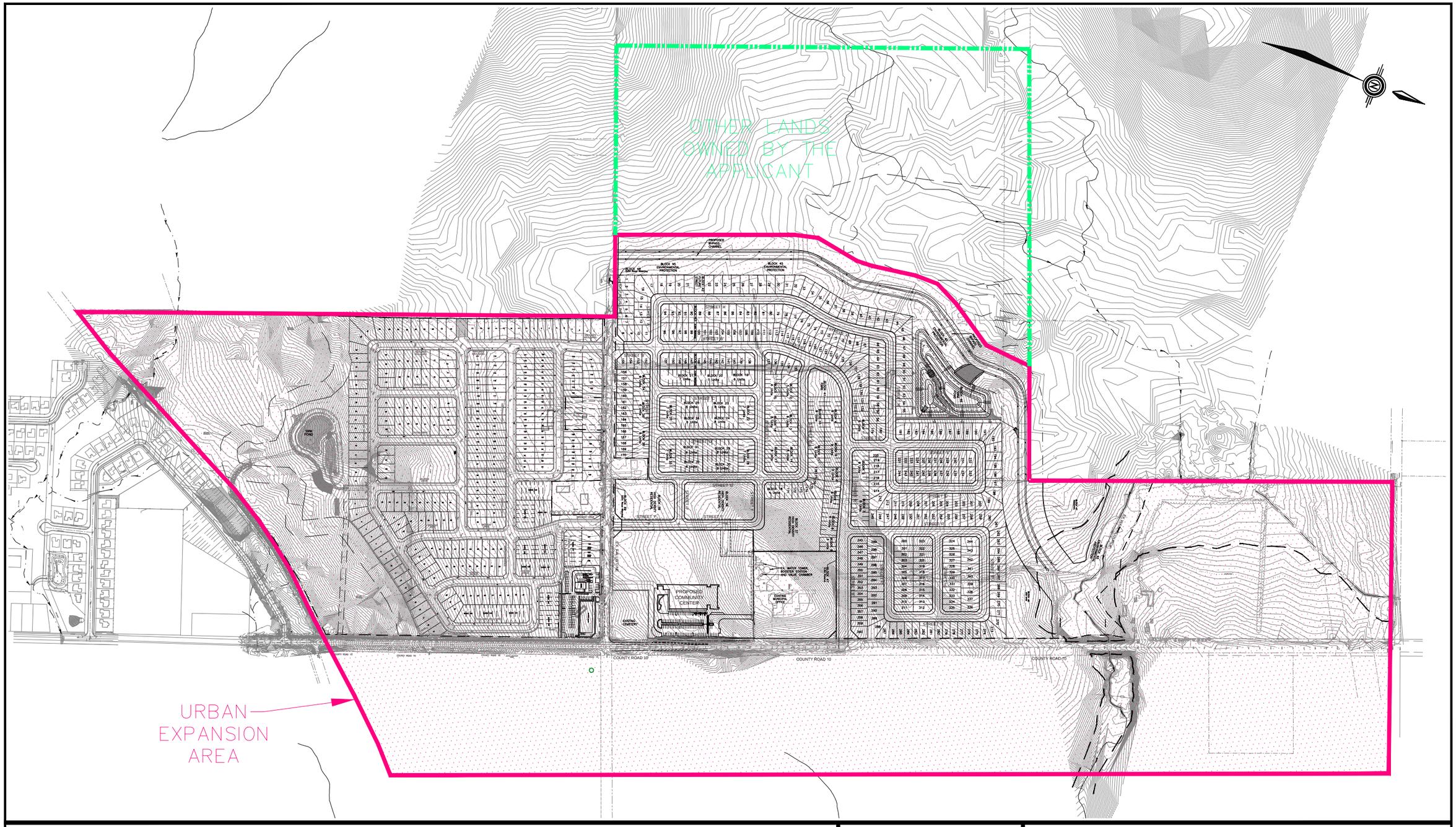
SCALE	N.TS.	PROJECT	17125
DATE	September, 2018	DRAWN BY	V.L.

FIGURE 1



MILLBROOK SUBDIVISION, PHASE 2

URBAN EXPANSION AREA

DRAWN BY	V.L.
CKD. BY	D.G.
DATE	September, 2018

VALDOR ENGINEERING INC.
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E-MAIL: info@valdor-engineering.com
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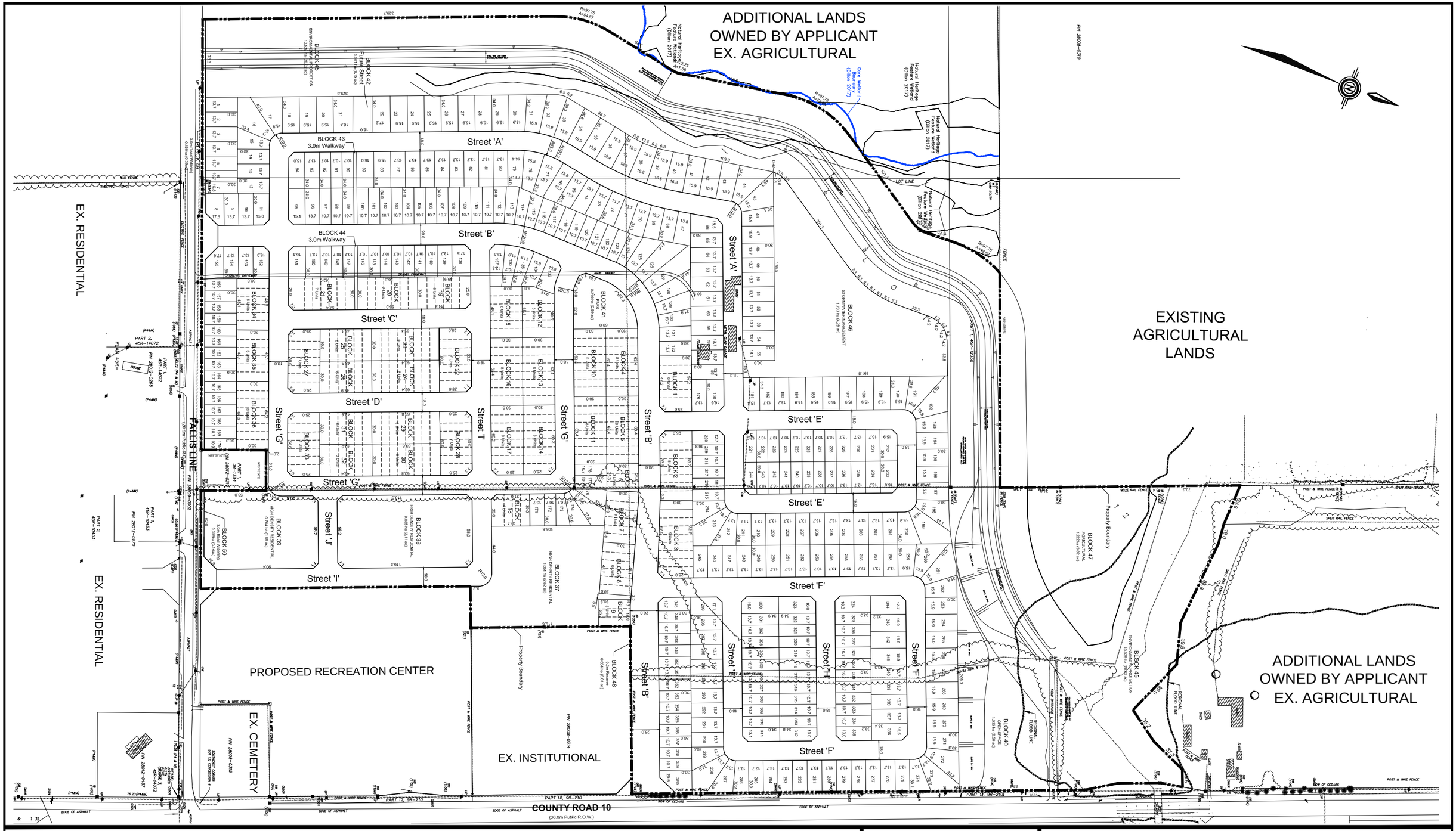
SCALE	PROJECT	
N.T.S.	17125	FIGURE 2



MILLBROOK SUBDIVISION, PHASE 2

DRAFT PLAN

DRAWN BY	V.L.
CKD. BY	D.G.
DATE	September, 2018

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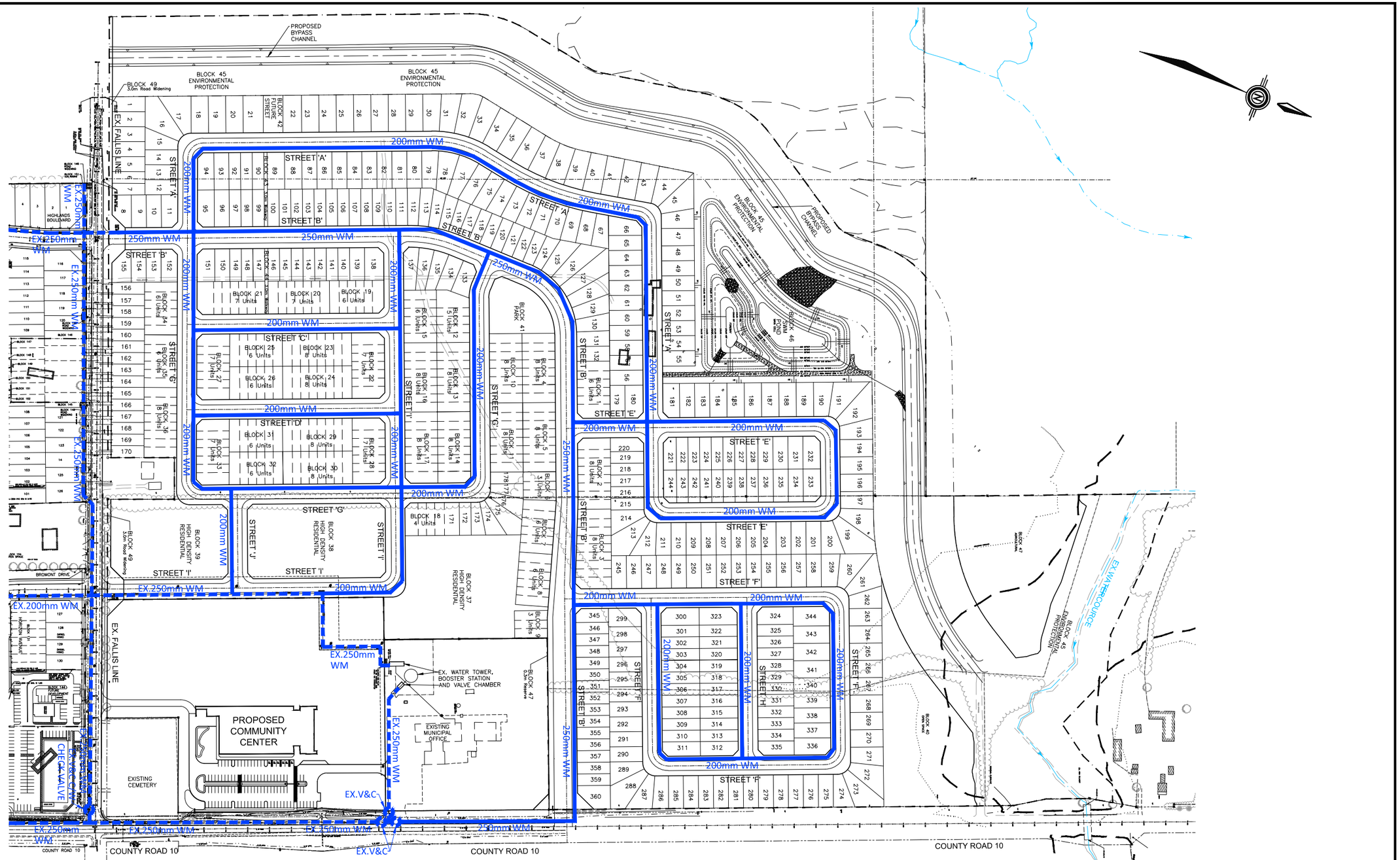
SCALE	PROJECT	
N.T.S.	17125	FIGURE 3



MILLBROOK SUBDIVISION, PHASE 2

WATER SERVICING

DRAWN BY	V.L.
CKD. BY	D.G.
DATE	September, 2018

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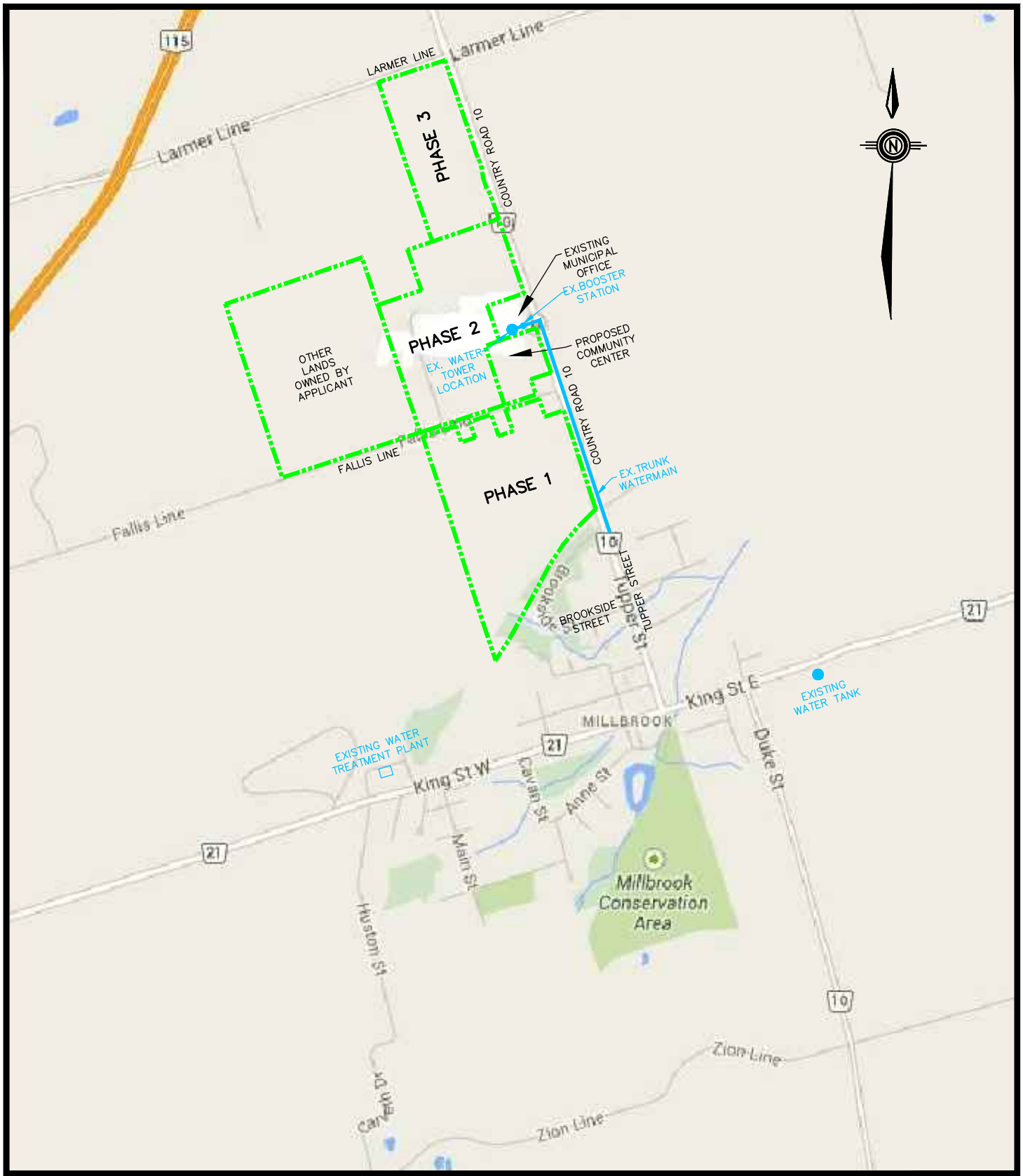
SCALE	PROJECT	
N.T.S.	17125	FIGURE 4A



MILLBROOK SUBDIVISION

WATER SERVICING EXTERNAL

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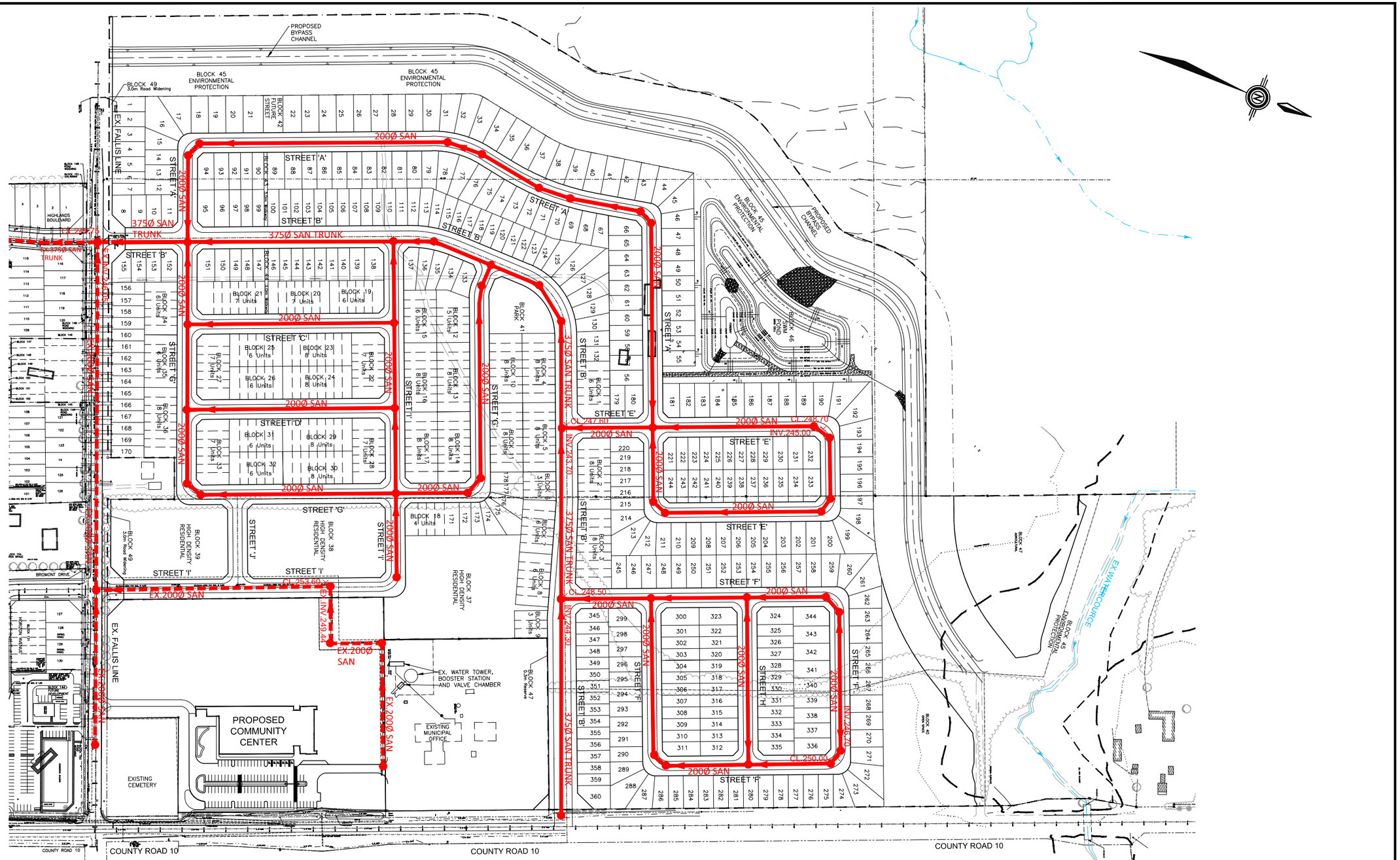
www.valdor-engineering.com

SCALE	N.TS.	PROJECT	17125
DATE	September, 2018	DRAWN BY	V.L.

FIGURE 4B



MILLBROOK SUBDIVISION, PHASE 2

WASTEWATER SERVICING

DRAWN BY	V.L.
CKD. BY	D.G.
DATE	September, 2018

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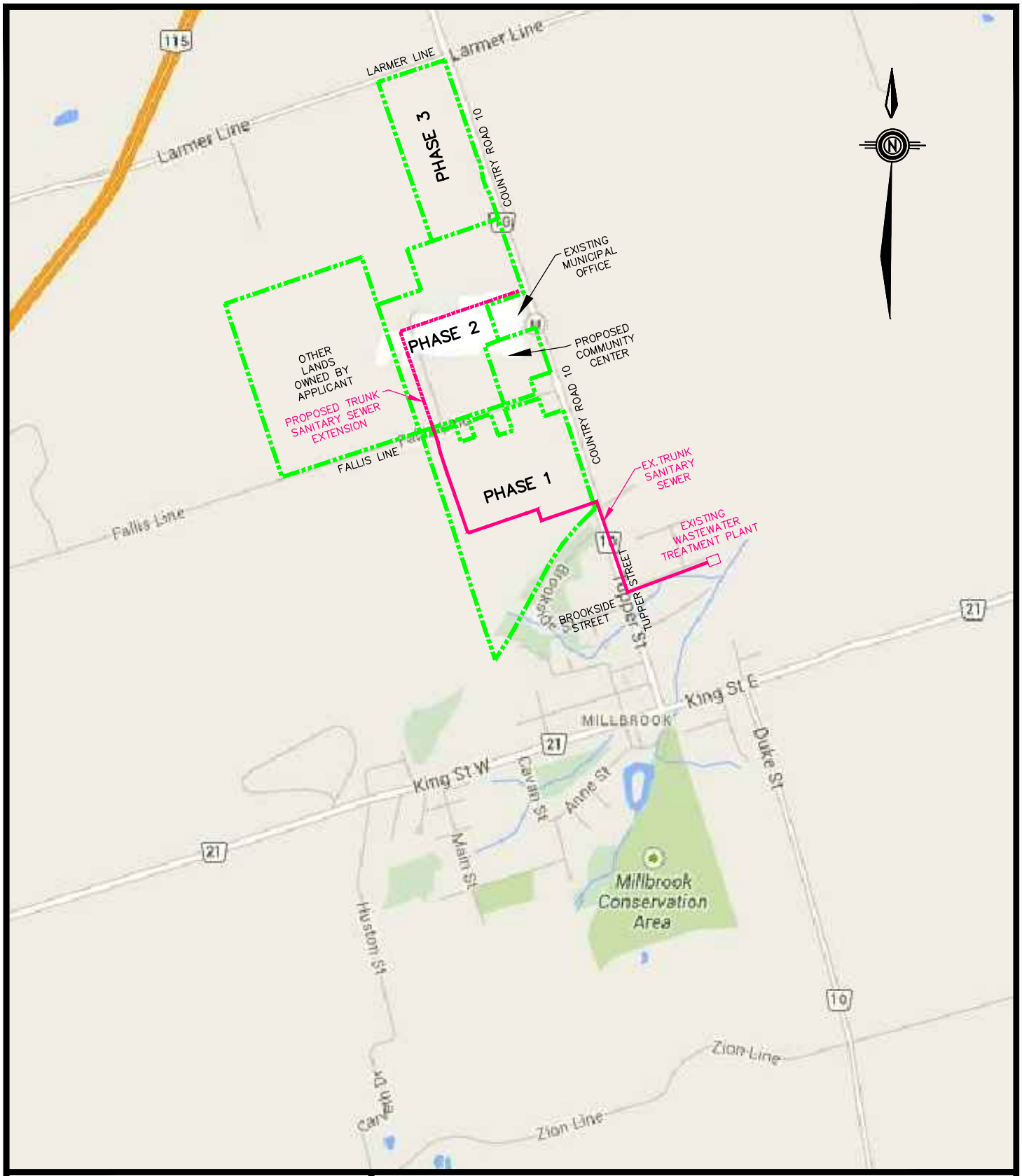
SCALE	PROJECT	
N.T.S.	17125	FIGURE 5A



MILLBROOK SUBDIVISION
PHASE 2

WASTEWATER SERVICING

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Consulting Engineers - Project Managers
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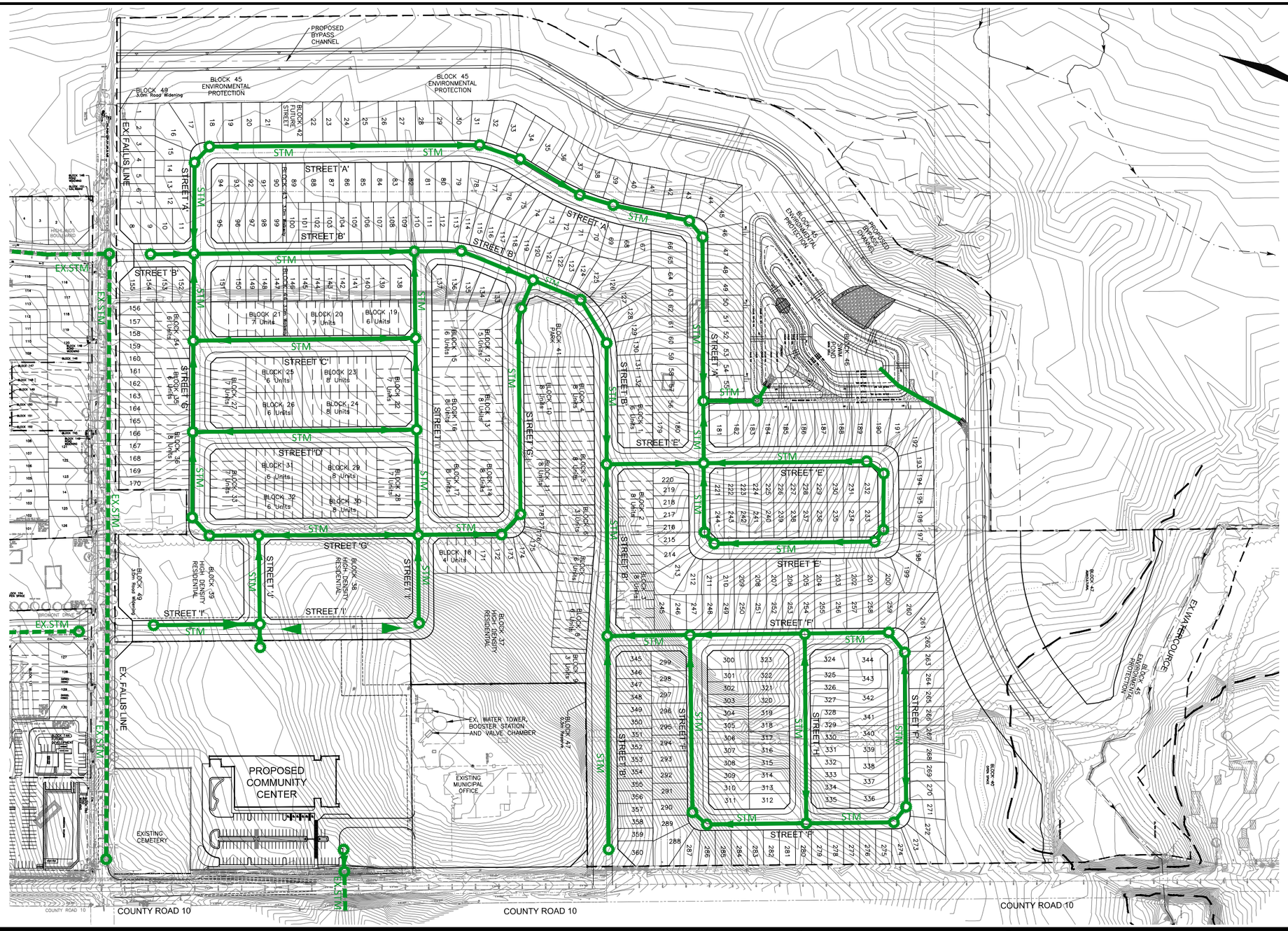
SCALE	N.T.S.	PROJECT	17125
DATE	September, 2018	DRAWN BY	V.L.

FIGURE 5B



MILLBROOK SUBDIVISION, PHASE 2

STORM SERVICING

DRAWN BY	V.L.
CKD. BY	D.G.
DATE	September, 2018

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
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E-MAIL: info@valdor-engineering.com
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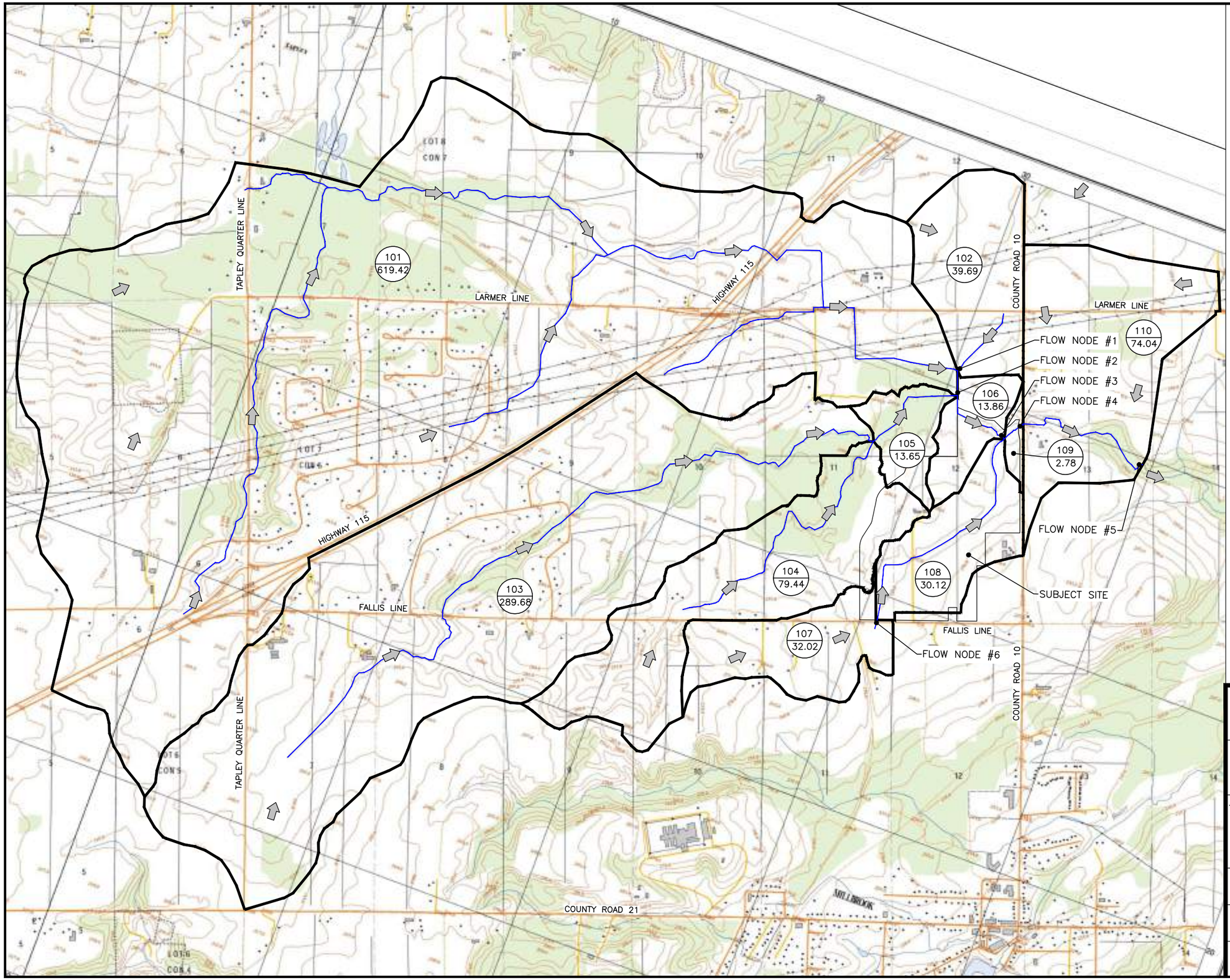
SCALE	PROJECT	
N.T.S.	17125	FIGURE 6



LEGEND

- 101 / 619.42 — CATCHMENT ID / AREA (HA)
- DRAINAGE BOUNDARY
- WATERCOURSE
- OVERLAND FLOW

FLOW NODE #	REGIONAL FLOW (cms)
1	4.131
2	29.637
3	49.855
4	53.508
5	57.561
6	2.511

PROJECT
MILLBROOK SUBDIVISION, PHASE 2
TOWNSHIP OF CAVAN MONAGHAN

TITLE
FLOODPLAIN MAPPING DRAINAGE PLAN

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
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www.valdor-engineering.com

PREPARED BY	CKD. BY
O.B.	B.C.
SCALE	DATE
NTS	SEPTEMBER 2018
PROJECT	
17125	FIGURE 7

LARMER LINE

EX. 600mm DIA. CSP CULVERT
D/S INV. 240.42

COUNTY ROAD 10

1.970
241.10

1.861
239.49

1.774
238.53

1.659
238.18

1.637
238.17

1.517
238.14

1.352
238.12

1.259
238.09

1.044
236.66

1.000
235.20

0.798
233.73

0.761
232.67

1.098
237.56

1.136
238.09

FLOW NODE #1
(FLOW APPLIED TO XS-1.970)

FLOW NODE #2
(FLOW APPLIED TO XS-1.637)

FLOW NODE #3
(FLOW APPLIED TO XS-1.517)

FLOW NODE #4
(FLOW APPLIED TO XS-1.259)

FLOW NODE #5
(FLOW APPLIED TO XS-1.044)

EX. 6.1m WIDE BY 2.44m
HIGH CONC. BOX CULVERT
U/S INV. 234.03
D/S INV. 234.15

LOT LINE

LEGEND

1.970 / 241.10 — HEC-RAS SECTION ID / REGIONAL WSE (m)

REGIONAL FLOODPLAIN

WATERCOURSE CENTERLINE

FLOW DIRECTION

PROJECT
MILLBROOK SUBDIVISION, PHASE 2
TOWNSHIP OF CAVAN MONAGHAN

TITLE
FLOODPLAIN MAPPING
REGULATORY FLOODPLAIN

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
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PREPARED BY	CKD. BY
O.B.	B.C.
SCALE	DATE
1:3000	SEPTEMBER 2018
PROJECT	
17125	FIGURE 8

BAXTER CREEK
TRIBUTARY C

BAXTER CREEK
TRIBUTARY A

EX. CULVERT

FLOW NODE #1

COUNTY ROAD 10

BAXTER CREEK
TRIBUTARY B

104
10.11

103
36.61

101
2.11

102
0.23

EX. CULVERT

FALLIS LINE

LEGEND

103 — CATCHMENT ID
36.61 — AREA (HA)

DRAINAGE BOUNDARY

OVERLAND FLOW

PROJECT
MILLBROOK SUBDIVISION, PHASE 2
TOWNSHIP OF CAVAN MONAGHAN

TITLE **SWM MODEL CATCHMENTS**
PRE-DEVELOPMENT

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
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PREPARED BY O.B.	CKD. BY B.C.
SCALE NTS	DATE MARCH 2019
PROJECT 17125	FIGURE 9

BAXTER CREEK TRIBUTARY C

BAXTER CREEK TRIBUTARY B

BAXTER CREEK TRIBUTARY A

EX. CULVERT

EX. WATERCOURCE

PROPOSED CHANNEL

SWM POND

FALLIS LINE

COUNTY ROAD 10

COUNTY ROAD 10

Street 'A'

Street 'B'

Street 'C'

Street 'D'

Street 'E'

Street 'F'

Street 'G'

Street 'H'

Street 'I'

Street 'J'

Street 'K'

Street 'L'

Property Boundary

207
12.81

205
0.97

203
1.73

204
0.92

202
30.25

101
2.11

201
2.84

208
1.78

206
1.09

102
0.23

105
0.59

EX. CULVERT

LEGEND

202 — CATCHMENT ID
30.25 — AREA (HA)

DRAINAGE BOUNDARY

OVERLAND FLOW

PROJECT
MILLBROOK SUBDIVISION, PHASE 2
TOWNSHIP OF CAVAN MONAGHAN

TITLE **SWM MODEL CATCHMENTS POST-DEVELOPMENT**

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
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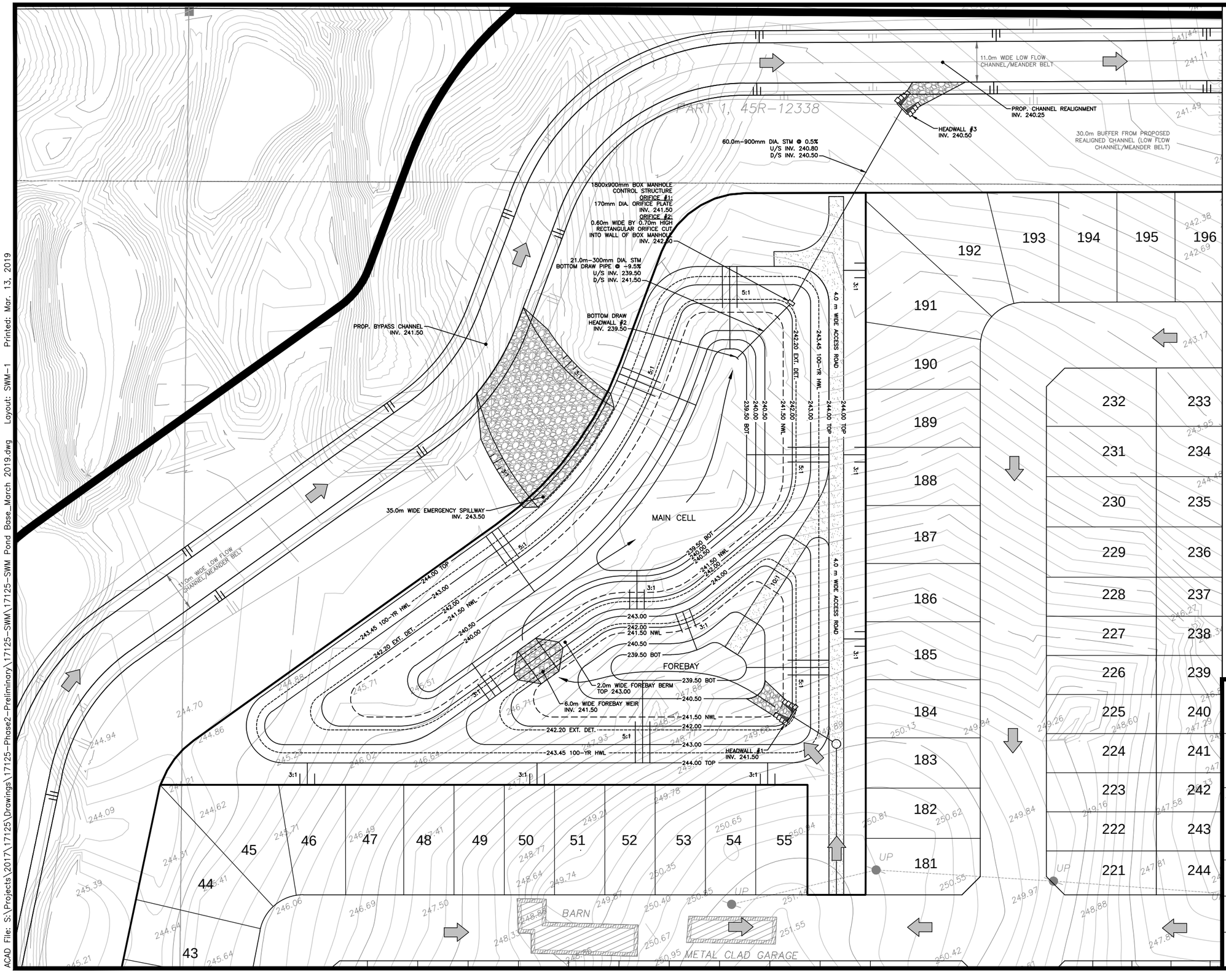
PREPARED BY	CKD. BY
O.B.	B.C.
SCALE	DATE
1:4000	MARCH 2019
PROJECT	
17125	FIGURE 10



ACAD File: S:\Projects\2017\17125\Drawings\17125-Phase2-Preliminary\17125-SWM\17125-SWM Pond Base_March 2019.dwg Layout: SWM-1 Printed: Mar. 13, 2019

LEGEND

- OVERLAND FLOW
- PERMANENT POOL
- RIP-RAP EROSION PROTECTION
- MAINTENANCE ACCESS ROAD

RETURN PERIOD	POND WSEL (m)
25 mm	242.20
2-YEAR	242.51
5-YEAR	242.76
10-YEAR	242.92
25-YEAR	243.13
50-YEAR	243.29
100-YEAR	243.46
REGIONAL	243.62

PROJECT
MILLBROOK SUBDIVISION, PHASE 2
TOWNSHIP OF CAVAN MONAGHAN

TITLE
STORMWATER MANAGEMENT POND

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
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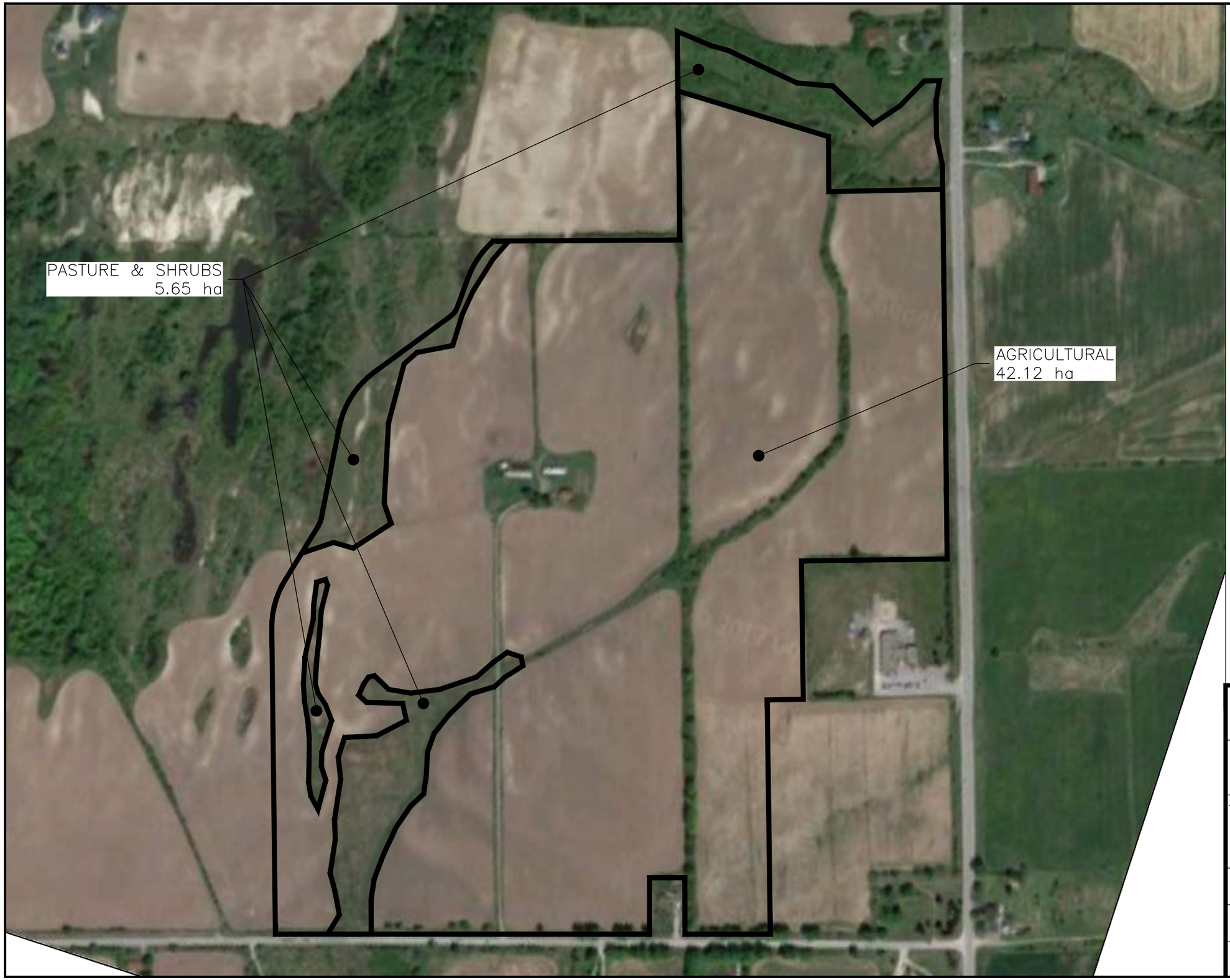
PREPARED BY	CKD. BY
O.B.	B.C.
SCALE: 1:1000	DATE: MARCH 2019
PROJECT: 17125	FIGURE 4



LEGEND

WATER BALANCE LAND USE BOUNDARY

PROJECT
MILLBROOK SUBDIVISION, PHASE 2
TOWNSHIP OF CAVAN MONAGHAN

TITLE
WATER BALANCE PLAN PRE-DEVELOPMENT

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
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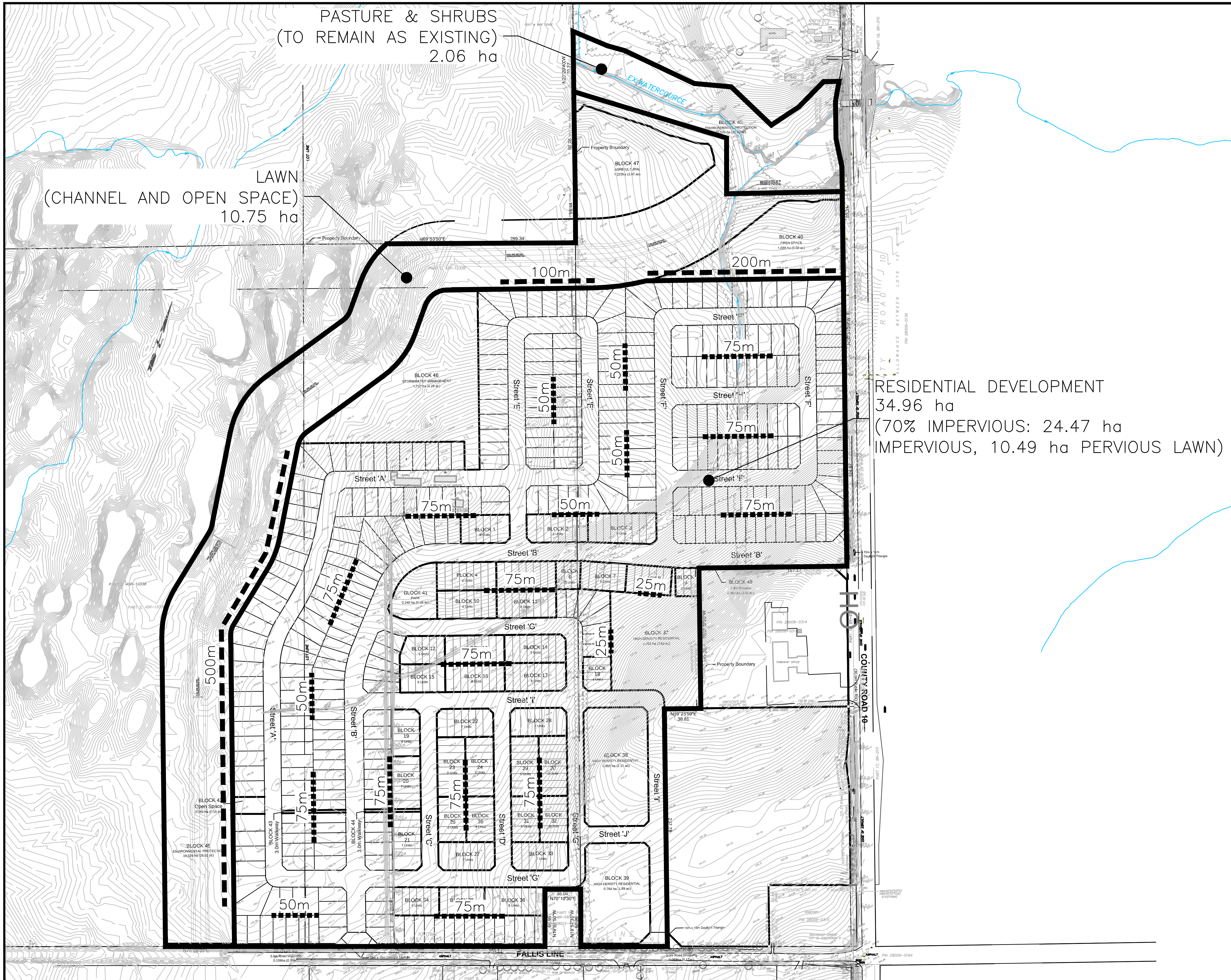
PREPARED BY: O.B.	CKD. BY: B.C.
SCALE: 1:4000	DATE: MARCH 2019
PROJECT: 17125	FIGURE 12



LEGEND

- WATER BALANCE LAND USE BOUNDARY
- RLCB INFILTRATION TRENCH
- REAR-OF-LOT SURFACE INFILTRATION TRENCH

PROJECT
MILLBROOK SUBDIVISION, PHASE 2
TOWNSHIP OF CAVAN MONAGHAN

TITLE
WATER BALANCE PLAN
POST-DEVELOPMENT

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
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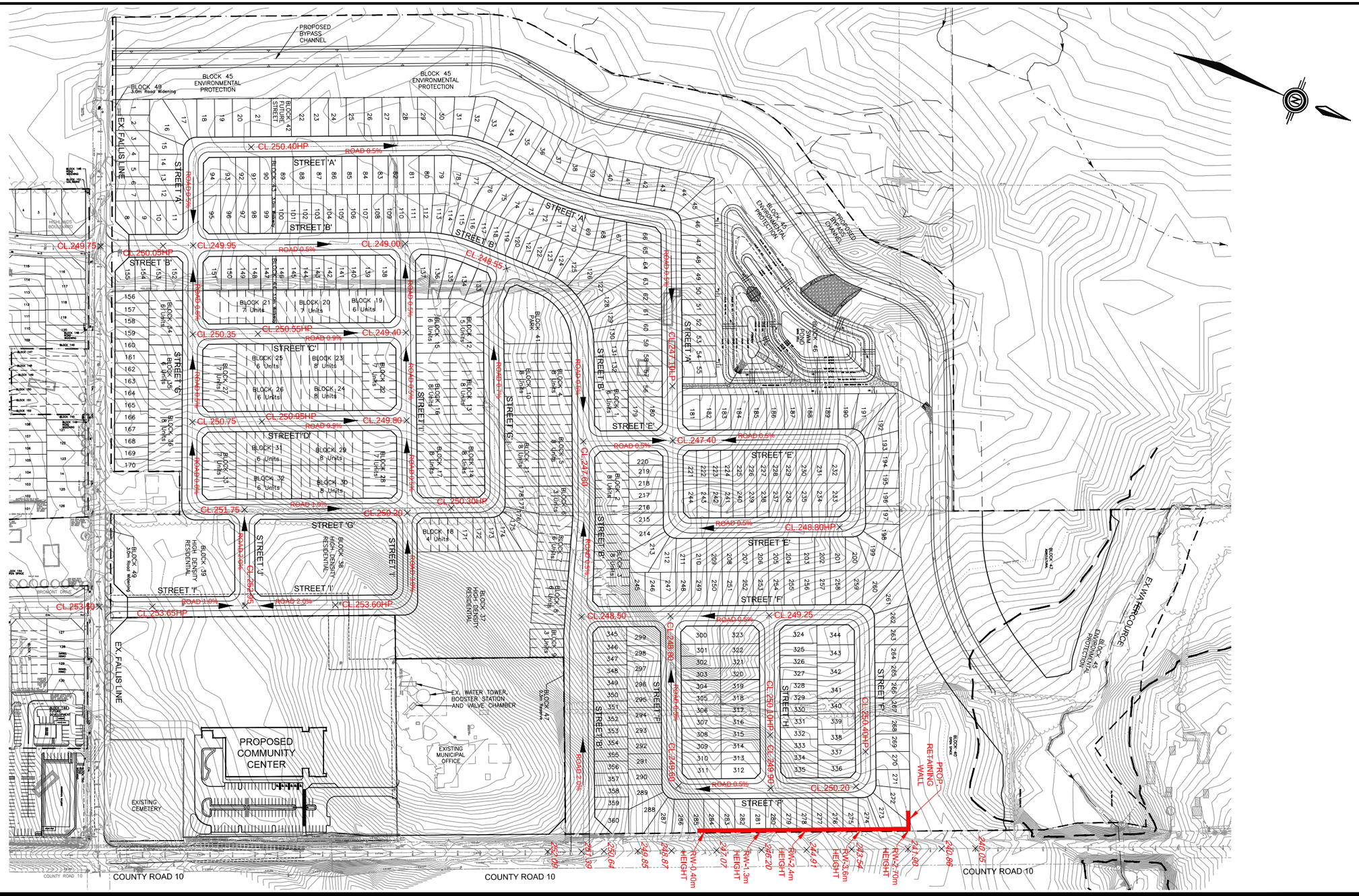
PREPARED BY	O.B.	CKD. BY	B.C.
SCALE	1:4000	DATE	MARCH 2019
PROJECT	17125		FIGURE 13



MILLBROOK SUBDIVISION, PHASE 2

CONCEPTUAL GRADING

DRAWN BY	V.L.
CKD. BY	D.G.
DATE	September, 2018

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SCALE	PROJECT	
N.T.S.	17125	FIGURE 14

APPENDIX "A"

Water Demand Calculations & Details

VALDOR ENGINEERING INC.
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TABLE: A1

DOMESTIC WATER CONSUMPTION DEMAND CALCULATION

Project Name: **Millbrook Subdivision Phase 2, Township of Cavan Monaghan**
File: 17125
Date: September 2018

Conditions:		
Residential Average Day Demand	450	L/person/day
Maximum Day Factor	2.0	
Peak Hour Factor	3.0	

Population:

Land Use	**No. of Units**	**Population Density** (ppu)	**Equivalent Population** (persons)
Detached Dwellings	360	3.5	1,260
Street Townhomes	244	3.0	732
Apartments	192	2.0	384
Total	**796**		**2,376**

Demand:

	Equivalent Population (persons)	**Domestic Demand** (L/min)	**Maximum Day Demand** (L/min)	**Peak Hour Demand** (L/min)
Detached Dwellings	1,260	394	788	1,181
Street Townhomes	732	229	458	686
Apartments	384	120	240	360
Total	**2,376**	**743**	**1,485**	**2,228**

VALDOR ENGINEERING INC.
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TABLE: A2-1

CALCULATION OF REQUIRED FIRE FLOW

In accordance to Water Supply for Public Fire Protection, Fire Underwriters Survey 1999

Project Name: **Millbrook Subdivision Phase 2**
File: 17125
Date: September 2018

Notes: **DETACHED DWELLING**
Assume:
- 3,500 sq.ft total floor area
- interior unit for max exposure

Type of Construction - Ordinary Construction

C = 1.0

Total Floor Area: 325 sq.m

A = 325 sq.m

(Total Floor Area includes all storeys, but excludes basements at least 50 percent below grade)

$F = 220\ C\ \sqrt{A}$

F = 3,966 L/min

F = 4,000 (to nearest 1,000 Lmin)

Occupancy Factor

		Charge
Type:	Non-Combustible	-25%
	f_1 =	-25%

$F' = F \times (1+f_1)$

F' = 3,000 L/min

Sprinkler Credit

		Charge
NFPA 13 Sprinkler Standard:	NO	0%
Standard Water Supply:	NO	0%
Fully Supervised System:	NO	0%
Total Charge to Fire Flow:	f_2 =	0%

Exposure Factor

		Charge
Side 1 - Distance to Building (m):	0 to 3m	25%
Side 2 - Distance to Building (m):	0 to 3m	25%
Side 3 - Distance to Building (m):	3.1 to 10m	20%
Side 4 - Distance to Building (m):	3.1 to 10m	20%
	f_3 =	75% (maximum of 75%)

$F'' = F' + F' \times f_2 + F' \times f_3$

F'' = 5,250 L/min

REQUIRED FIRE FLOW

F'' = **5,000** **L/min** (to nearest 1,000 L/min)

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Tel: 905-264-0054 Fax: 905-264-0069 info@valdor-engineering.com
www.valdor-engineering.com

TABLE: A2-2

CALCULATION OF REQUIRED FIRE FLOW

In accordance to Water Supply for Public Fire Protection, Fire Underwriters Survey 1999

Project Name: **Millbrook Subdivision Phase 2**
File: 17125
Date: September 2018

Notes: **STREET TOWNHOMES DWELLING**
Assume:
- 2,500 sq.ft total floor area
- interior unit for max exposure

Type of Construction - Ordinary Construction

C = 1.0

Total Floor Area:	233	sq.m
A =	233	sq.m

(Total Floor Area includes all storeys, but excludes basements at least 50 percent below grade)

$F = 220\ C\ \sqrt{A}$
F = 3,358 L/min
F = 3,000 (to nearest 1,000 Lmin)

Occupancy Factor

		Charge
Type:	Non-Combustible	-25%
	f_1 =	-25%

$F' = F \times (1+f_1)$
F' = 2,250 L/min

Sprinkler Credit

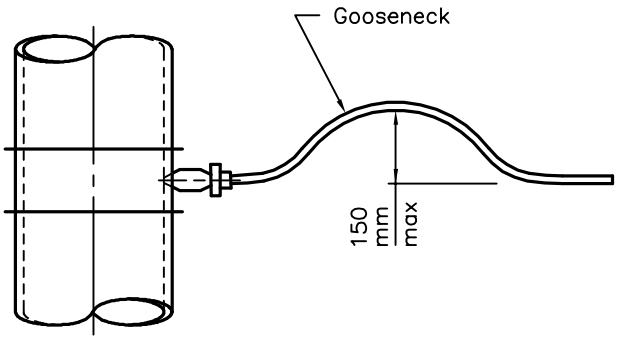
		Charge
NFPA 13 Sprinkler Standard:	NO	0%
Standard Water Supply:	NO	0%
Fully Supervised System:	NO	0%
Total Charge to Fire Flow:	f_2 =	0%

Exposure Factor

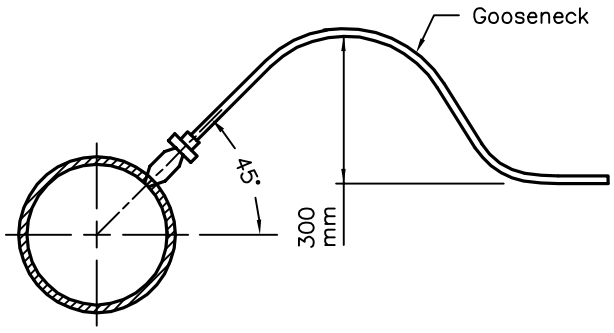
		Charge
Side 1 - Distance to Building (m):	0 to 3m	25%
Side 2 - Distance to Building (m):	0 to 3m	25%
Side 3 - Distance to Building (m):	3.1 to 10m	20%
Side 4 - Distance to Building (m):	3.1 to 10m	20%
	f_3 =	75% (maximum of 75%)

$F'' = F' + F' \times f_2 + F' \times f_3$
F'' = 3,938 L/min

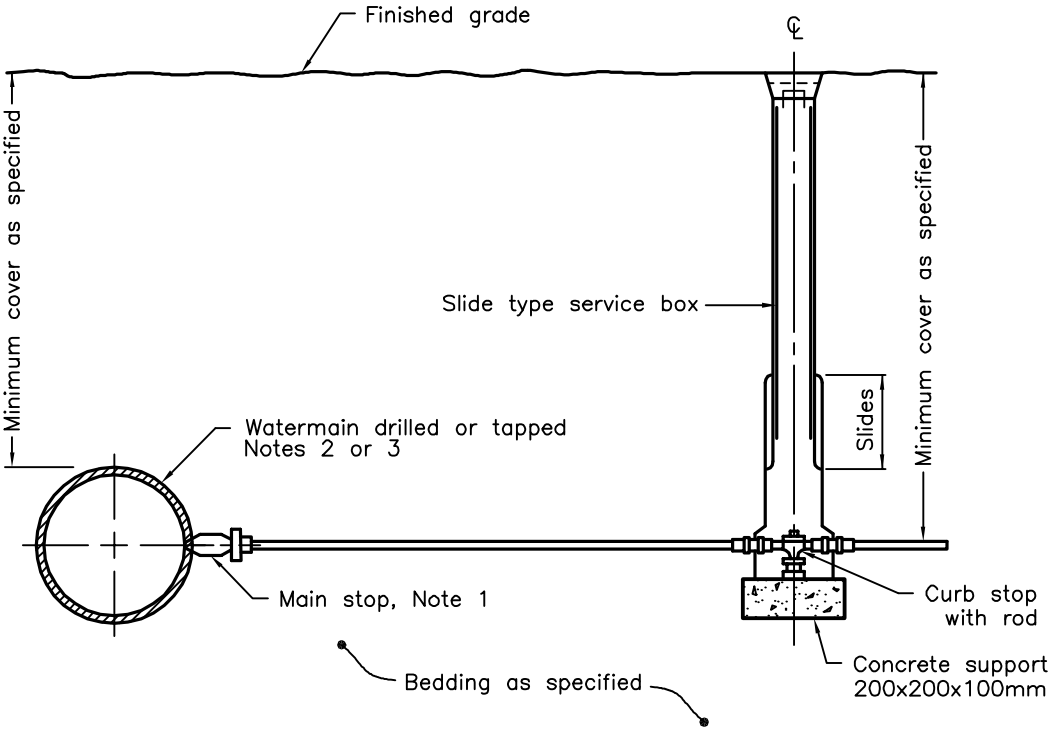
REQUIRED FIRE FLOW
F'' = **4,000** **L/min** (to nearest 1,000 L/min)



HORIZONTAL GOOSENECK



VERTICAL GOOSENECK OPTION



VERTICAL SECTION

NOTES:

1 For plastic service pipes, install main stop at 15° above horizontal with a minimum 1.2m long gooseneck.

2 Direct tap ductile iron pipe with approved tool with standard AWWA inlet thread.

3 Service connections to plastic watermains shall be made using service saddles or factory made tees.

A When specified, the vertical gooseneck option shall be used.

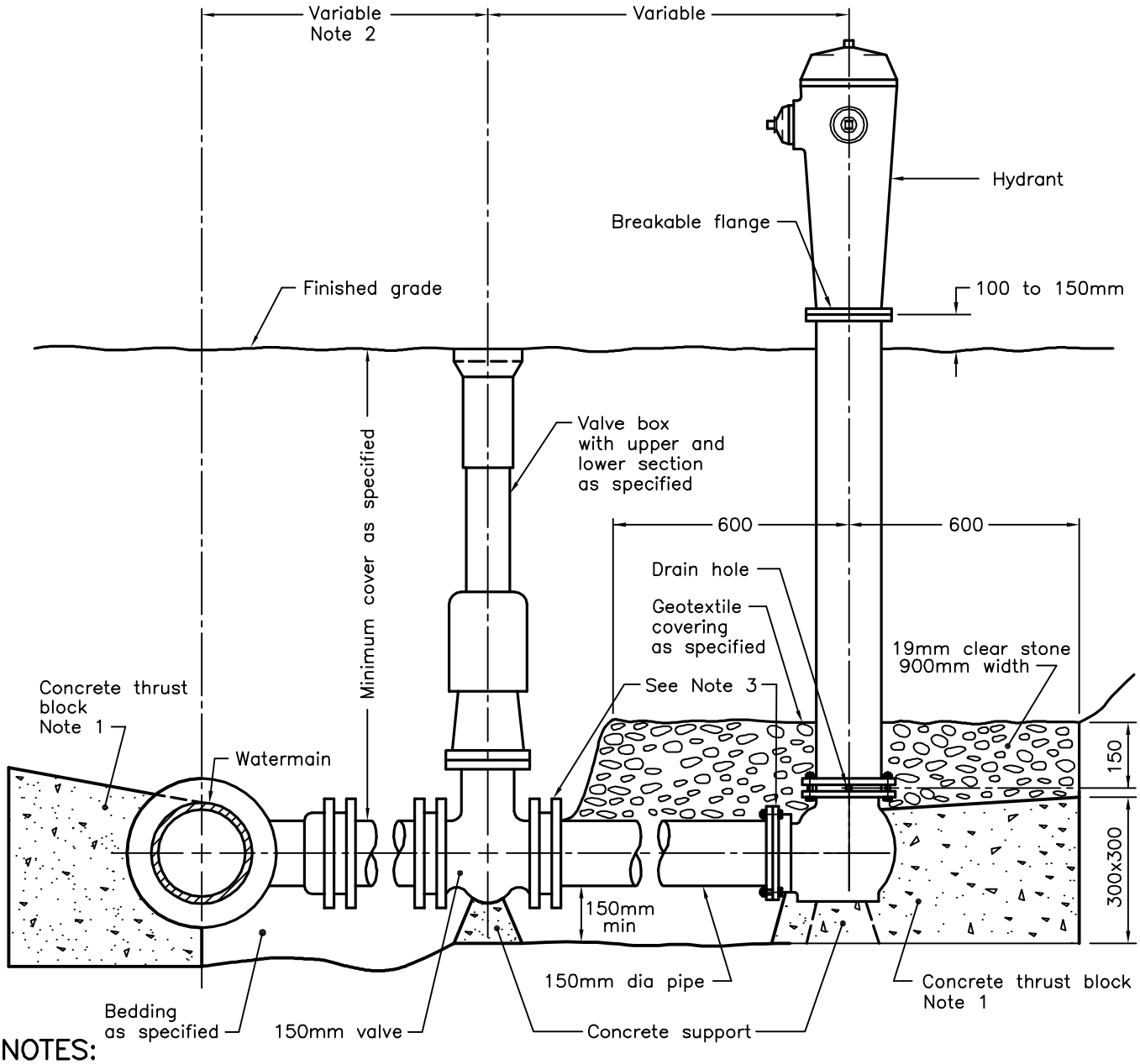
B Couplings shall not be permitted unless the service length exceeds 20m between the main stop and curb stop.

C All water services shall be installed 90° to the longitudinal axis of the watermain.

D Backfill material within 500mm of service box shall be native or imported, as specified.

E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	3
WATER SERVICE CONNECTION 19 and 25mm DIAMETER SIZES			
	OPSD 1104.010		



NOTES:

1 All concrete thrust blocks shall be poured against undisturbed ground.

2 When specified, for watermains 400mm and less, locate valve within 1.0m of centreline of watermain. Retaining and restraining devices shall be utilized. For watermains 600mm and over, bolt valve with flanged end directly to flanged tee.

3 When specified, retaining and restraining devices shall be utilized, in addition to thrust blocks.

A Bond breaker shall be used between the concrete and the fittings and appurtenances.

B Bolts and nuts for buried flange to flange connections shall be stainless steel.

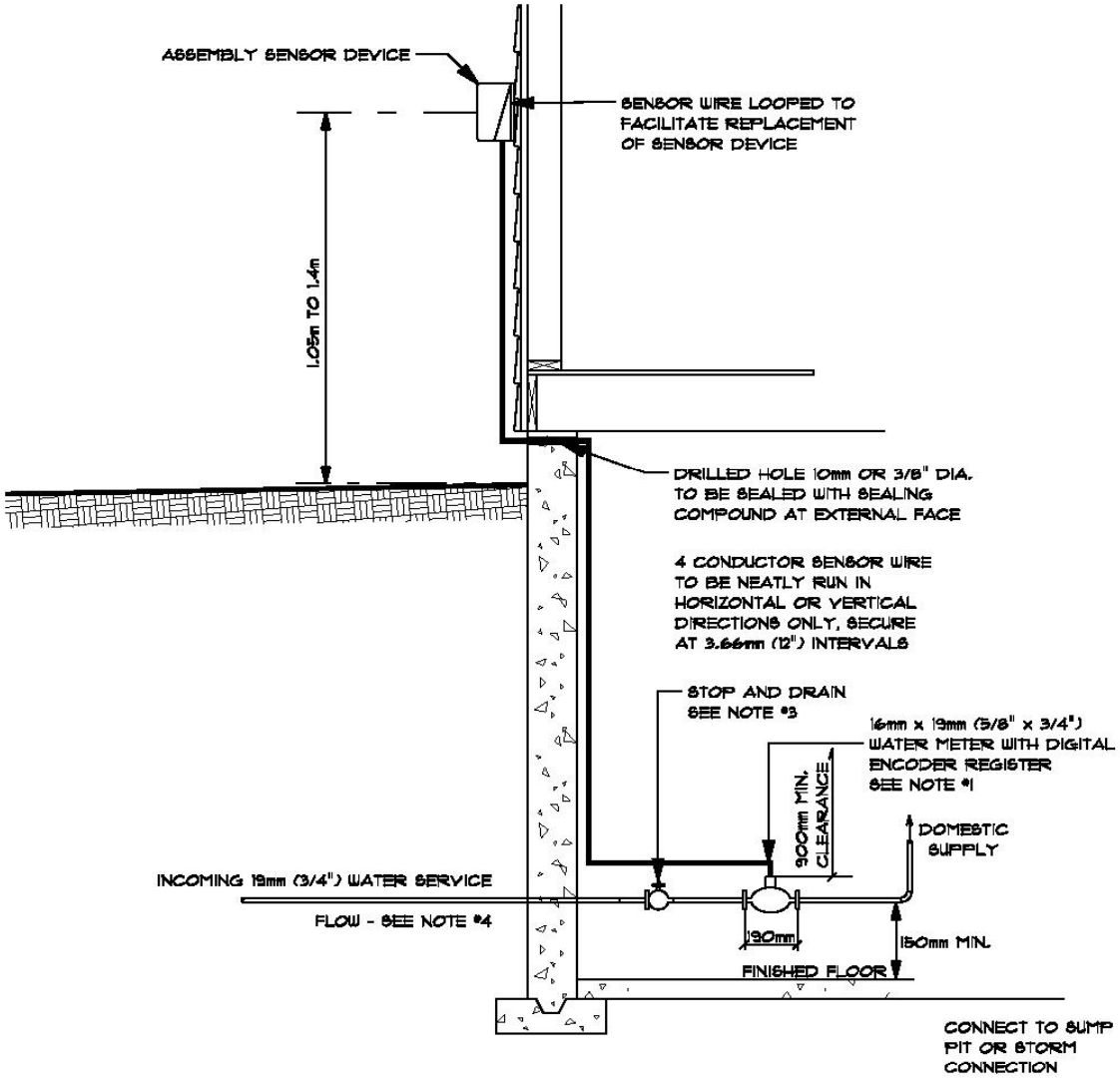
C When required, flange of standpipe extensions shall not be in frost zone.

D This OPSD shall be read in conjunction with OPSD 1103.010 and 1103.020.

E Backfill material within 500mm of service box shall be native or imported, as specified.

F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	2
HYDRANT INSTALLATION			
	OPSD 1105.010		



NOTES:

1 - METER SHALL BE 16mm (5/8") METER, REGISTRATION IN CUBIC METERES. 19mm (3/4") THREADED CONNECTIONS

2 - SUPPLY AND INSTALL REMOTE READOUT DEVICE ON OUTSIDE WALL WITHIN 2.0m OF THE FROST WALL AND IN THE SAME SIDE AS THE HYDRO METER. REMOTE READOUT DEVICE SHALL BE SUITABLE FOR TOUCH READ AUTOMATED READING AND BILLING SYSTEM.

3 - STOP AND DRAIN VALVE TO BE THE SAME SIZE AS INCOMING PIPE

4 - IF HOT WATER TANK IS WITHIN 3.0m OF THE METER, A CHECK VALVE IS REQUIRED BETWEEN THE METER AND THE HOT WATER TANK.

5 - METER SHALL BE INSTALLED USING THREADED CONNECTIONS ONLY

TOWNSHIP OF CAVAN MONAGHAN

TYPICAL WATER METER INSTALLATION

SCALE: NOT TO SCALE

DATE: AUGUST 2013

STD. S7

APPENDIX "B"

Wastewater Calculations & Details

VALDOR ENGINEERING INC.
741 Rowntree Dairy Road, Suite 2, Woodbridge, ON L4L 5T9
Tel: 905-264-0054 Fax: 905-264-0069 info@valdor-engineering.com
www.valdor-engineering.com

TABLE: B1

WASTEWATER FLOW CALCULATIONS

Project Name: **Millbrook Subdivision Phase 2, Township of Cavan Monaghan**
File: 17125
Date: September 2018

Conditions:

Residential Average Daily Flow:	450	L/person/day
Residential Peaking Factor:	$K_H = 1 + \frac{14}{4 + \sqrt{P}}$	where K_H = Harmon Peaking Factor (max. 4.0, min. 2.75) p = population in thousands
Extraneous Flow (I):	0.14	L/s/ha. (infiltration)
Design Flow (Q_D):	$Q \times K_H + I$	

Population:

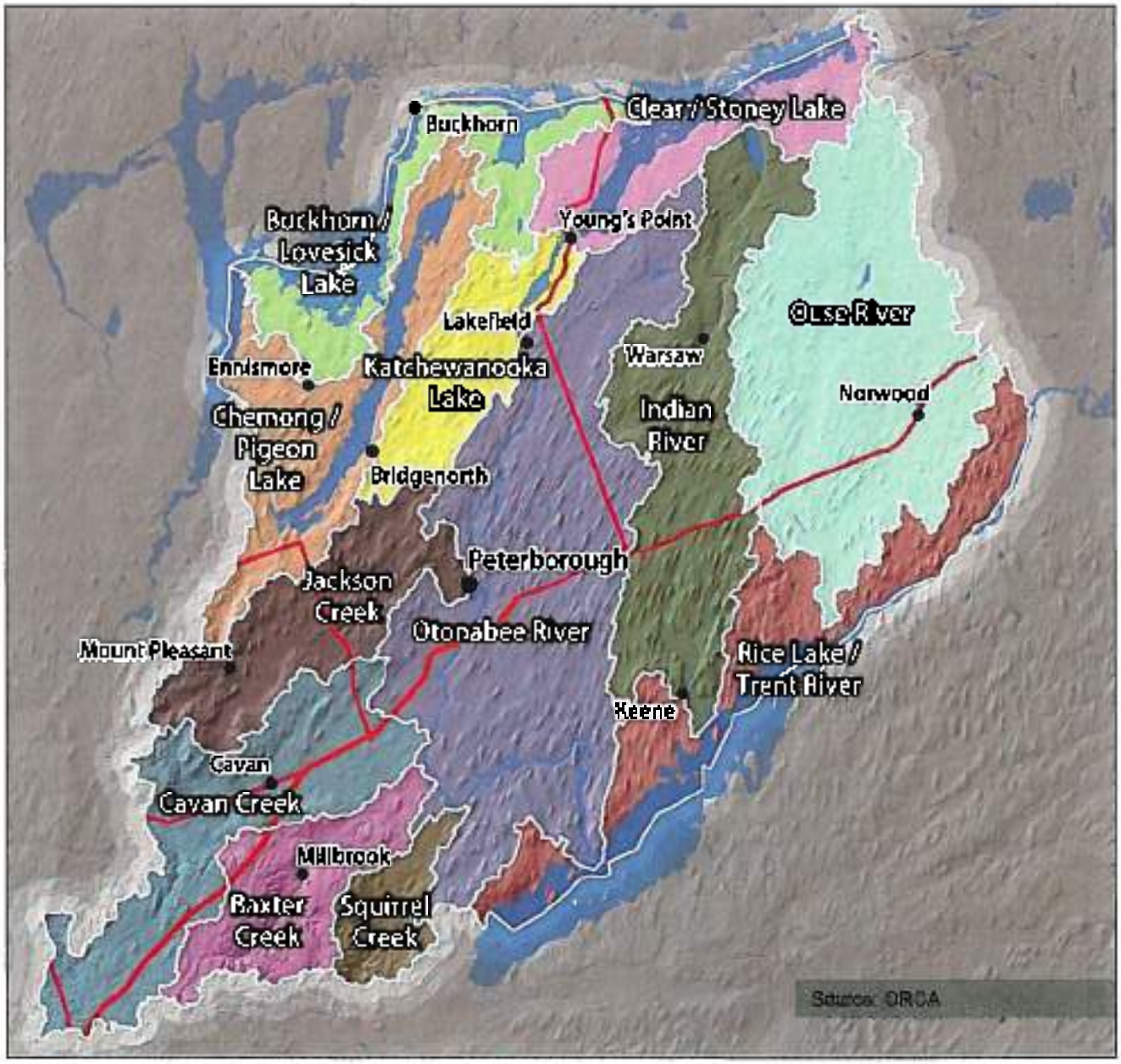
Land Use	No. of Units	Population Density (ppu)	Equivalent Population (persons)
Detached Dwellings	360	3.5	1,260
Street Townhomes	244	3.0	732
Apartments	192	2.0	384
Total	**796**		**2,376**

Wastewater Load:

Land Use	Area (ha.)	Equivalent Population (persons)	Average Daily Flow (L/s)	Harmon Peaking Factor	Peak Daily Flow (L/s)	Extraneous Flow (L/s)	Total Flow (L/s)
Detached Dwellings	15.367	1,260	6.56	3.73	24.50	2.15	26.65
Street Townhomes	5.983	732	3.81	3.88	14.81	0.84	15.64
Apartments	2.680	384	2.00	4.00	8.00	0.38	8.38
Roads	9.944					1.39	1.39
Total	**33.974**	**2,376**	**12.38**		**47.30**	**4.76**	**52.06**

APPENDIX "C"

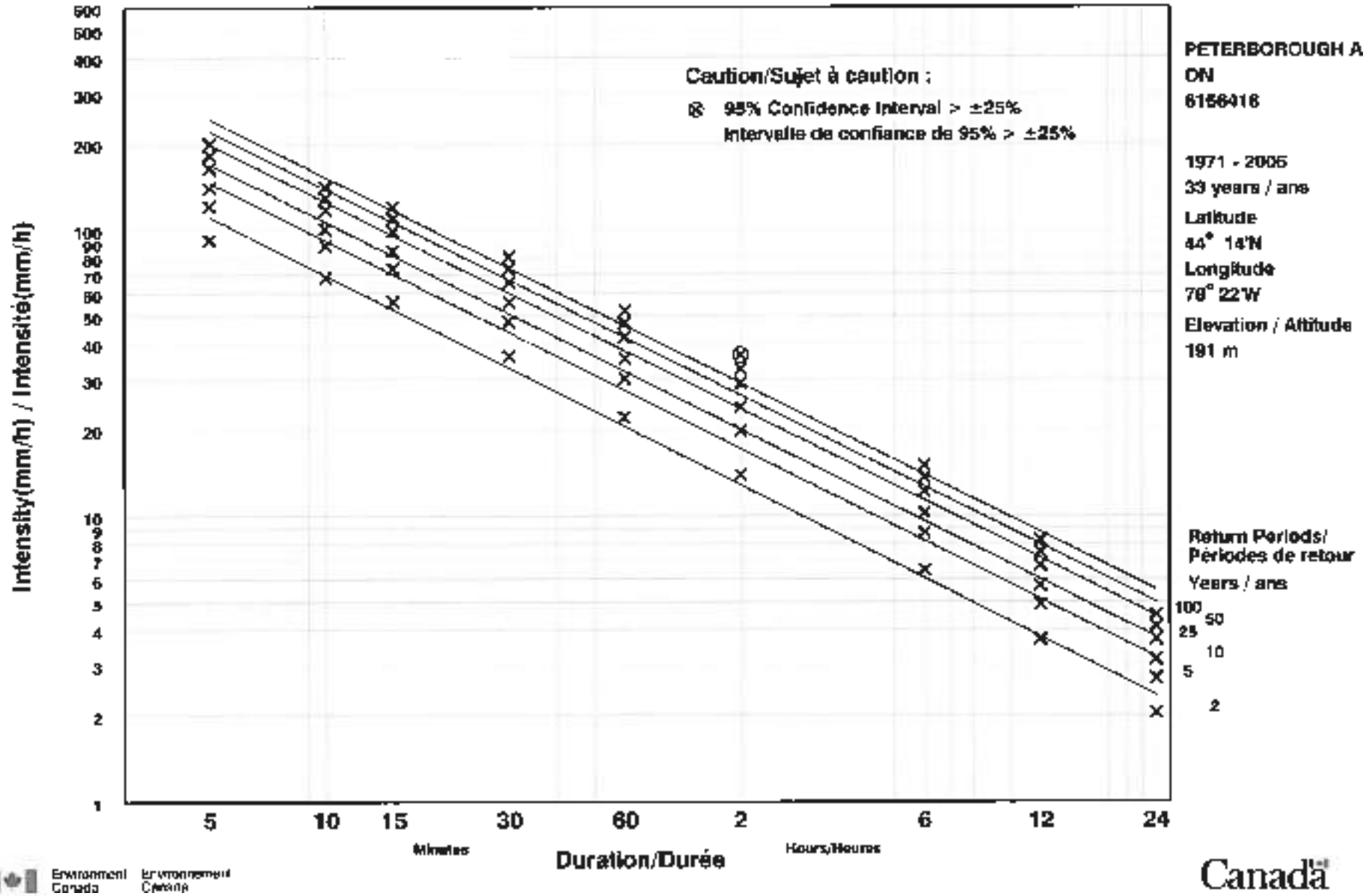
Storm Drainage Details


Buckhorn
Clear / Stoney Lake
Buckhorn / Lovesick Lake
Young's Point
Lakefield
Otonabee River
Warsaw
Ennismore
Katchewanooka Lake
Norwood
Chemong / Pigeon Lake
Indian River
Bridgenorth
Peterborough
Jackson Creek
Otonabee River
Mount Pleasant
Rice Lake / Trent River
Keene
Cavan
Cavan Creek
Millbrook
Baxter Creek
Squirrel Creek
Source: ORCA

Short Duration Rainfall Intensity-Duration-Frequency Data

2014/12/21

Données sur l'intensité, la durée et la fréquence des chutes de pluie de courte durée



Environment Canada / Environnement Canada

Canada

Intensity Duration Frequency Statistics for Peterborough

Location - Peterborough Airport 2014 Data

Rainfall Intensity = a/(Tc+b)^c

Tc = Time of Concentration

2 Year Return Period		
a	b	c
583.354	6.210	0.773
Duration	Intensity	
5	97.0	
10	69.2	
15	56.0	
30	35.9	
60	22.1	
120	13.9	
360	6.4	
720	3.7	
1440	2.0	

5 Year Return Period		
a	b	c
843.799	7.503	0.783
Duration	Intensity	
5	121.3	
10	87.7	
15	73.1	
30	47.8	
60	30.1	
120	19.9	
360	8.7	
720	4.9	
1440	2.7	

10 Year Return Period		
a	b	c
1034.243	8.265	0.791
Duration	Intensity	
5	143.2	
10	100.7	
15	84.5	
30	55.6	
60	35.4	
120	23.9	
360	10.2	
720	5.7	
1440	3.1	

25 Year Return Period		
a	b	c
1263.414	9.012	0.795
Duration	Intensity	
5	164.4	
10	117.0	
15	98.5	
30	65.5	
60	42.1	
120	28.0	
360	12.2	
720	6.7	
1440	3.7	

50 Year Return Period		
a	b	c
1468.915	9.751	0.801
Duration	Intensity	
5	182.3	
10	129.1	
15	108.4	
30	72.9	
60	47.1	
120	32.7	
360	13.6	
720	7.5	
1440	4.1	

100 Year Return Period		
a	b	c
1698.552	10.507	0.808
Duration	Intensity	
5	200.2	
10	141.1	
15	120.0	
30	80.2	
60	52.0	
120	36.4	
360	15.0	
720	8.2	
1440	4.5	

APPENDIX "D"

Flood Plain Analysis

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: September 2018

Table D.1: VO5 Model Parameters - Floodplain Drainage Area

Subcatchment	Area (ha)	VO5 Routine	TIMP	XIMP	CN II	IA (mm)	Tp (hr)
101	619.42	NasHyd	-	-	71	7.1	2.09
102	39.69	NasHyd	-	-	84	6.9	0.27
103	289.68	NasHyd	-	-	74	7.0	1.46
104	79.44	NasHyd	-	-	64	7.6	1.02
105	13.65	NasHyd	-	-	78	7.9	0.63
106	13.86	NasHyd	-	-	84	7.0	0.22
107	32.02	NasHyd	-	-	79	7.0	0.66
108	30.12	NasHyd	-	-	80	7.0	1.06
109	2.78	NasHyd	-	-	58	8.0	0.33
110	74.04	NasHyd	-	-	78	7.4	0.66
Total	**1,194.70**						

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: September 2018

Table D.2: Calculation of CN Values, Initial Abstractions and Runoff Coefficients

Subcatchment	Area (ha)	Land Use and Land Cover		CN II	Area Weighted CN II	IA (mm)	Area Weighted IA (mm)	C-Value	Area Weighted C-Value
		Type	Area (ha)						
		Row Crops (HSG 'B')	289.42	81		7		0.35	
		Forest (HSG 'B')	105.02	55		10		0.25	
		Meadow (HSG 'B')	55.36	44		8		0.28	
		Low-Density Dev. (HSG 'B')	115.53	68		4.4		0.40	
101	619.42	Row Crops (HSG 'C')	41.37	88	**71**	7	**7.1**	0.55	**0.36**
		Forest (HSG 'C')	4.80	70		10		0.35	
		Meadow (HSG 'C')	1.08	58		8		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		4.4		0.50	
		Other Impervious	6.84	98		2		0.95	
		Row Crops (HSG 'B')	24.08	81		7		0.35	
		Forest (HSG 'B')	0.00	55		10		0.25	
		Meadow (HSG 'B')	0.00	44		8		0.28	
		Low-Density Dev. (HSG 'B')	0.00	68		4.4		0.40	
102	39.69	Row Crops (HSG 'C')	14.79	88	**84**	7	**6.9**	0.55	**0.44**
		Forest (HSG 'C')	0.00	70		10		0.35	
		Meadow (HSG 'C')	0.00	58		8		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		4.4		0.50	
		Other Impervious	0.82	98		2		0.95	
		Row Crops (HSG 'B')	165.41	81		7		0.35	
		Forest (HSG 'B')	28.02	55		10		0.25	
		Meadow (HSG 'B')	15.15	44		8		0.28	
		Low-Density Dev. (HSG 'B')	48.01	68		4.4		0.40	
103	289.68	Row Crops (HSG 'C')	9.77	88	**74**	7	**7.0**	0.55	**0.36**
		Forest (HSG 'C')	16.32	70		10		0.35	
		Meadow (HSG 'C')	1.04	58		8		0.40	
		Low-Density Dev. (HSG 'C')	2.16	79		4.4		0.50	
		Other Impervious	3.80	98		2		0.95	
		Row Crops (HSG 'B')	38.96	81		7		0.35	
		Forest (HSG 'B')	8.22	55		10		0.25	
		Meadow (HSG 'B')	31.24	44		8		0.28	
		Low-Density Dev. (HSG 'B')	0.00	68		4.4		0.40	
104	79.44	Row Crops (HSG 'C')	0.00	88	**64**	7	**7.6**	0.55	**0.32**
		Forest (HSG 'C')	0.00	70		10		0.35	
		Meadow (HSG 'C')	0.00	58		8		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		4.4		0.50	
		Other Impervious	1.02	98		2		0.95	
		Row Crops (HSG 'B')	6.02	81		7		0.35	
		Forest (HSG 'B')	0.43	55		10		0.25	
		Meadow (HSG 'B')	0.51	44		8		0.28	
		Low-Density Dev. (HSG 'B')	0.00	68		4.4		0.40	
105	13.65	Row Crops (HSG 'C')	3.20	88	**78**	7	**7.9**	0.55	**0.39**
		Forest (HSG 'C')	3.49	70		10		0.35	
		Meadow (HSG 'C')	0.00	58		8		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		4.4		0.50	
		Other Impervious	0.00	98		2		0.95	

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: September 2018

Table D.2 (Cont'd): Calculation of CN Values, Initial Abstractions and Runoff Coefficients

Subcatchment	Area (ha)	Land Use and Land Cover		CN II	Area Weighted CN II	IA (mm)	Area Weighted IA (mm)	C-Value	Area Weighted C-Value
		Type	Area (ha)						
		Row Crops (HSG 'B')	7.44	81		**7**		0.35	
		Forest (HSG 'B')	0.00	55		**10**		0.25	
		Meadow (HSG 'B')	0.00	44		**8**		0.28	
		Low-Density Dev. (HSG 'B')	0.00	68		**4.4**		0.40	
106	13.86	Row Crops (HSG 'C')	6.25	88	**84**	**7**	**7.0**	0.55	**0.44**
		Forest (HSG 'C')	0.17	70		**10**		0.35	
		Meadow (HSG 'C')	0.00	58		**8**		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		**4.4**		0.50	
		Other Impervious	0.00	98		**2**		0.95	
		Row Crops (HSG 'B')	28.18	81		**7**		0.35	
		Forest (HSG 'B')	0.00	55		**10**		0.25	
		Meadow (HSG 'B')	3.27	58		**8**		0.28	
		Low-Density Dev. (HSG 'B')	0.00	68		**4.4**		0.40	
107	32.02	Row Crops (HSG 'C')	0.00	88	**79**	**7**	**7.0**	0.55	**0.35**
		Forest (HSG 'C')	0.00	70		**10**		0.35	
		Meadow (HSG 'C')	0.00	58		**8**		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		**4.4**		0.50	
		Other Impervious	0.58	98		**2**		0.95	
		Row Crops (HSG 'B')	28.04	81		**7**		0.35	
		Forest (HSG 'B')	0.00	55		**10**		0.25	
		Meadow (HSG 'B')	1.70	58		**8**		0.28	
		Low-Density Dev. (HSG 'B')	0.00	68		**4.4**		0.40	
108	30.12	Row Crops (HSG 'C')	0.00	88	**80**	**7**	**7.0**	0.55	**0.35**
		Forest (HSG 'C')	0.00	70		**10**		0.35	
		Meadow (HSG 'C')	0.00	58		**8**		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		**4.4**		0.50	
		Other Impervious	0.38	98		**2**		0.95	
		Row Crops (HSG 'B')	0.00	81		**7**		0.35	
		Forest (HSG 'B')	0.00	55		**10**		0.25	
		Meadow (HSG 'B')	1.89	58		**8**		0.28	
		Low-Density Dev. (HSG 'B')	0.00	68		**4.4**		0.40	
109	2.78	Row Crops (HSG 'C')	0.00	88	**58**	**7**	**8.0**	0.55	**0.32**
		Forest (HSG 'C')	0.00	70		**10**		0.35	
		Meadow (HSG 'C')	0.89	58		**8**		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		**4.4**		0.50	
		Other Impervious	0.00	98		**2**		0.95	
		Row Crops (HSG 'B')	53.66	81		**7**		0.35	
		Forest (HSG 'B')	9.74	55		**10**		0.25	
		Meadow (HSG 'B')	0.00	58		**8**		0.28	
		Low-Density Dev. (HSG 'B')	0.00	68		**4.4**		0.40	
110	74.04	Row Crops (HSG 'C')	7.20	88	**78**	**7**	**7.4**	0.55	**0.37**
		Forest (HSG 'C')	2.33	70		**10**		0.35	
		Meadow (HSG 'C')	0.00	58		**8**		0.40	
		Low-Density Dev. (HSG 'C')	0.00	79		**4.4**		0.50	
		Other Impervious	1.12	98		**2**		0.95	

Note: All agricultural areas were assumed to have 2% imperviousness to account for roads, houses, etc., except for *Catchments 105, 106* and *109*.

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: September 2018

Table D.3: Calculation of Time to Peak

Subcatchment	A Area (ha)	C Runoff Coefficient	L Catchment Length (m)	Highest Elevation (m)	Lowest Elevation (m)	S Catchment Slope (%)	[1,2]T_c Method	T_c (min)	T_p (hr)
101	619.42	0.36	6781	320.00	237.00	1.22	Airport	186.8	2.09
102	39.69	0.44	1010	354.00	237.00	11.58	Bransby-Williams	24.4	0.27
103	289.68	0.36	4294	316.00	240.40	1.76	Airport	131.0	1.46
104	79.44	0.32	2375	300.00	240.40	2.51	Airport	91.5	1.02
105	13.65	0.39	495	240.40	236.58	0.77	Airport	56.0	0.63
106	13.86	0.44	552	251.00	234.49	2.99	Bransby-Williams	19.4	0.22
107	32.02	0.35	1134	278.00	247.00	2.73	Airport	58.8	0.66
108	30.12	0.35	2303	278.00	234.49	1.89	Airport	94.7	1.06
109	2.78	0.32	309	245.20	234.03	3.61	Airport	29.3	0.33
110	74.04	0.37	710	234.03	225.00	1.27	Airport	58.9	0.66

Notes:
1) T_p calculation for catchments with C < 0.40 is based on the Airport Formula:

$$T_c = 3.26 \times (1.1 - C) \times L^{0.5} / S_w^{0.33}$$

2) T_p calculation for catchments with C > 0.40 is based on the Bransby-Williams Formula:

$$T_c = (0.057)(L) / (S_w)^{0.2} (A)^{0.1}$$

$$T_P = 0.67 T_c$$

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: September 2018

Table D.4: Critical Storm Analysis

Return Period	Distribution	Peak Flow (m^3/s)					
		Flow Node #1	Flow Node #2	Flow Node #3	Flow Node #4	Flow Node #5	Flow Node #6
100-year	6-hour AES	4.873	14.520	26.162	28.538	31.254	2.087
	12-hour AES	3.515	14.457	25.218	27.307	29.770	1.801
	24-hour AES	2.183	13.349	22.894	24.724	26.906	1.409
	6-hour SCS	**5.881**	14.392	25.668	27.894	30.466	2.211
	12-hour SCS	5.777	14.562	25.882	28.087	30.762	2.208
	24-hour SCS	5.610	14.617	25.478	27.613	30.806	2.163
	4-hour Chicago	4.216	11.590	20.435	22.188	24.167	1.662
Regional	**Timmins Storm**	4.131	**29.637**	**49.855**	**53.508**	**57.561**	**2.511**

Notes:
1) 100-year storm files were created using the latest Peterborough Airport IDF data (1971-2006).
2) The Timmins storm is the Regulatory storm used to delineate the Regulatory floodlines.

VALDOR ENGINEERING INC.

Project: Millbrook Subdivision, Phase 2

File: 17125

Date: September 2018

Table D.5: HEC-RAS Flow Input Summary

Flow Node #	HEC-RAS Flow Change Location	Regulatory Flow (cms)
1	XS-1.970	4.131
2	XS-1.637	29.637
3	XS-1.517	49.855
4	XS-1.259	53.508
5	XS-1.044	57.561

Table D.6: HEC-RAS Output - Regional Flow

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	# Chl
North_Trib	1.970	Regional	4.13	240.4	241.1	241.1	241.17	0.007289	1.36	7.48	63.67	0.67
North_Trib	1.861	Regional	4.13	238.76	239.49	239.48	239.62	0.011036	1.68	3.41	21.2	0.82
North_Trib	1.774	Regional	4.13	238.07	238.53	238.53	238.62	0.011982	1.55	5.47	37.04	0.84
North_Trib	1.659	Regional	4.13	237.28	238.18		238.18	0.000046	0.17	73.66	151.45	0.06
North_Trib	1.637	Regional	29.64	236.23	238.17		238.17	0.000171	0.44	199.89	238.64	0.11
North_Trib	1.517	Regional	49.86	235.8	238.14		238.15	0.000171	0.62	259.94	215.39	0.13
North_Trib	1.352	Regional	49.86	235.5	238.12		238.13	0.000195	0.71	187.89	120.36	0.15
North_Trib	1.259	Regional	53.51	234.9	238.09		238.11	0.000302	1.01	165.55	117.21	0.19
North_Trib	1.136	Regional	53.51	234.04	238.09		238.09	0.000058	0.51	312.48	145.05	0.08
North_Trib	1.098	Regional	53.51	233.78	237.56	236.26	237.96	0.002074	2.92	20.72	108.18	0.5
North_Trib	1.071		Culvert									
North_Trib	1.044	Regional	57.56	233.62	236.66	236.17	237.39	0.005086	3.92	16.4	72.12	0.76
North_Trib	1.000	Regional	57.56	233.3	235.2		235.3	0.003281	2.15	57.09	50.02	0.55
North_Trib	0.798	Regional	57.56	231.49	233.73	233.73	234.19	0.013919	4.92	32.15	33.08	1.11
North_Trib	0.761	Regional	57.56	231.02	232.67	232.62	233.02	0.012613	4.2	35.11	39.41	1.07

Bypass Channel: 0.5% Slope, Uncontrolled Regional Flow

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.080	
Channel Slope	0.00500	m/m
Left Side Slope	3.00	m/m (H:V)
Right Side Slope	3.00	m/m (H:V)
Bottom Width	11.00	m
Discharge	6.321	m³/s

Results

Normal Depth	0.74	m
Flow Area	9.79	m²
Wetted Perimeter	15.68	m
Hydraulic Radius	0.62	m
Top Width	15.44	m
Critical Depth	0.31	m
Critical Slope	0.09575	m/m
Velocity	0.65	m/s
Velocity Head	0.02	m
Specific Energy	0.76	m
Froude Number	0.26	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	m
Length	0.00	m
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	m
Profile Description		
Profile Headloss	0.00	m
Downstream Velocity	Infinity	m/s
Upstream Velocity	Infinity	m/s
Normal Depth	0.74	m
Critical Depth	0.31	m
Channel Slope	0.00500	m/m

Bypass Channel: 0.5% Slope, Uncontrolled Regional Flow

GVF Output Data

Critical Slope	0.09575	m/m

Bypass Channel: 2.0% Slope, Uncontrolled Regional Flow

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.080	
Channel Slope	0.02000	m/m
Left Side Slope	3.00	m/m (H:V)
Right Side Slope	3.00	m/m (H:V)
Bottom Width	11.00	m
Discharge	6.321	m³/s

Results

Normal Depth	0.50	m
Flow Area	6.20	m²
Wetted Perimeter	14.14	m
Hydraulic Radius	0.44	m
Top Width	13.98	m
Critical Depth	0.31	m
Critical Slope	0.09574	m/m
Velocity	1.02	m/s
Velocity Head	0.05	m
Specific Energy	0.55	m
Froude Number	0.49	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	m
Length	0.00	m
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	m
Profile Description		
Profile Headloss	0.00	m
Downstream Velocity	Infinity	m/s
Upstream Velocity	Infinity	m/s
Normal Depth	0.50	m
Critical Depth	0.31	m
Channel Slope	0.02000	m/m

Bypass Channel: 2.0% Slope, Uncontrolled Regional Flow

GVF Output Data

Critical Slope	0.09574	m/m

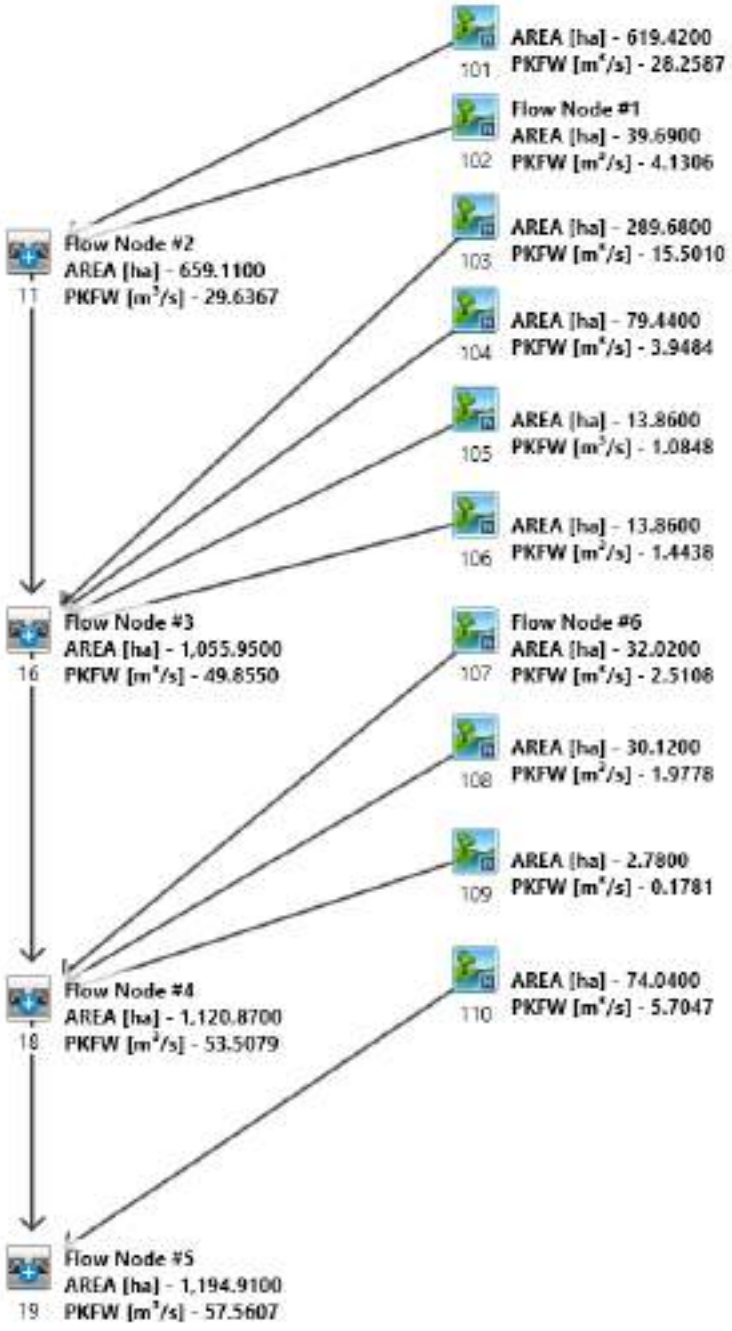


Figure D.1: VO5 Model Schematic – Floodplain Drainage Area

```
================================================================================
==============

       V    V   I    SSSSS  U   U    A    L             (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\fc940250-ed07-412c-85e3-
c94b4cb6310f\f433b504-7c7e-4816-9319-f294e19ddee0\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\fc940250-ed07-412c-85e3-
c94b4cb6310f\f433b504-7c7e-4816-9319-f294e19ddee0\scena


DATE: 09-06-2018                          TIME: 11:41:48

USER:


COMMENTS: VO5 Model Output – Floodplain Drainage Area

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  **********************************************
  ** SIMULATION : TIMMINS                     **     Regional Storm (Timmins)
  **********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
| Ptotal=193.00 mm |    Comments: * Timmins Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
                0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
                0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
                1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
                1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
                1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
                1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
                2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
                2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
                2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
                2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
                3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)= 619.42   Curve Number   (CN)= 71.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   7.10   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   2.09

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.167  15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
                0.333  15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
                0.500  15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
                0.667  15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
                0.833  15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
                1.000  15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
                1.167  20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
                1.333  20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
                1.500  20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
                1.667  20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
                1.833  20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
                2.000  20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
                2.167  10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
                2.333  10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
                2.500  10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
                2.667  10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
                2.833  10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
                3.000  10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

    Unit Hyd Qpeak  (cms)=  11.320

    PEAK FLOW       (cms)=  28.259 (i)
    TIME TO PEAK    (hrs)=   9.833
    RUNOFF VOLUME    (mm)= 119.313
    TOTAL RAINFALL   (mm)= 193.000
    RUNOFF COEFFICIENT   =   0.618

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
| Ptotal=193.00 mm |    Comments: * Timmins Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
                0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
                0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
                1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
                1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
                1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
                1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
                2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
                2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
                2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
                2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
                3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

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| CALIB            |
| NASHYD   (  0102)|   Area    (ha)=  39.69   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   6.90   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.27

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 5.615

PEAK FLOW (cms)= 4.131 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 146.432
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.759

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0011)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0101):	619.42	28.259	9.83	119.31
	+ ID2= 2 (0102):	39.69	4.131	7.00	146.43
	ID = 3 (0011):	659.11	29.637	9.83	120.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
Ptotal=193.00 mm	Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

CALIB	
NASHYD (0103) | ID= 1 DT=10.0 min	Area (ha)= 289.68 Curve Number (CN)= 74.0 Ia (mm)= 7.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 1.46

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 7.578

PEAK FLOW (cms)= 15.501 (i)
TIME TO PEAK (hrs)= 9.167
RUNOFF VOLUME (mm)= 125.691
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.651

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
Ptotal=193.00 mm	Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

CALIB

```
| NASHYD   (  0104)|   Area    (ha)=  79.44   Curve Number   (CN)= 64.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   7.60   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   1.02

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
               0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
               0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
               0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
               0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
               1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
               1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
               1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
               1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
               1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
               1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
               2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
               2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
               2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
               2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
               2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
               2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
               3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

    Unit Hyd Qpeak  (cms)=   2.975

    PEAK FLOW       (cms)=   3.948 (i)
    TIME TO PEAK    (hrs)=   7.833
    RUNOFF VOLUME    (mm)= 104.703
    TOTAL RAINFALL   (mm)= 193.000
    RUNOFF COEFFICIENT   =   0.543

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
| Ptotal=193.00 mm |    Comments: * Timmins Storm
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
               0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
               0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
               1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
               1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
               1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
               1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
               2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
               2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
               2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
               2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
               3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

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-------------------
| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=  13.86   Curve Number   (CN)= 78.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   7.90   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.63

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
               0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
               0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
               0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
               0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
               1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
               1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
               1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
               1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
               1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
               1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
               2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
               2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
               2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
               2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
               2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
               2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
               3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

    Unit Hyd Qpeak  (cms)=   0.840

    PEAK FLOW       (cms)=   1.085 (i)
    TIME TO PEAK    (hrs)=   7.167
    RUNOFF VOLUME    (mm)= 133.407
    TOTAL RAINFALL   (mm)= 193.000
    RUNOFF COEFFICIENT   =   0.691

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
| Ptotal=193.00 mm |    Comments: * Timmins Storm
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                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
               0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
               0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
               1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
               1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
               1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
               1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
               2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
               2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
               2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
               2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
               3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

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| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=  13.86   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   7.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.22

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 2.406

PEAK FLOW (cms)= 1.444 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 144.890
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.751

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0103):	289.68	15.501	9.17	125.69
	+ ID2= 2 (0104):	79.44	3.948	7.83	104.70
	ID = 3 (0016):	369.12	19.211	9.00	121.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0016)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0016):	369.12	19.211	9.00	121.17
	+ ID2= 2 (0105):	13.86	1.085	7.17	133.41
	ID = 1 (0016):	382.98	19.977	9.00	121.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0016)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0016):	382.98	19.977	9.00	121.62
	+ ID2= 2 (0106):	13.86	1.444	7.00	144.89
	ID = 3 (0016):	396.84	20.792	9.00	122.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0016)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0016):	396.84	20.792	9.00	122.43
	+ ID2= 2 (0011):	659.11	29.637	9.83	120.95
	ID = 1 (0016):	1055.95	49.855	9.17	121.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM | Filename: C:\Users\Valdor\AppData\Local\Temp\36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
Ptotal=193.00 mm | Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

CALIB NASHYD (0107) | ID= 1 DT=10.0 min | Area (ha)= 32.02 | Ia (mm)= 7.00 | U.H. Tp(hrs)= 0.66 | Curve Number (CN)= 79.0 | # of Linear Res.(N)= 3.00

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 1.853

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     PEAK FLOW      (cms)=   2.511 (i)
     TIME TO PEAK   (hrs)=   7.333
     RUNOFF VOLUME   (mm)= 136.427
     TOTAL RAINFALL  (mm)= 193.000
     RUNOFF COEFFICIENT  =   0.707

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
Ptotal=193.00 mm	Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

CALIB			
NASHYD (0108)	Area (ha)= 30.12	Curve Number (CN)= 80.0	
ID= 1 DT=10.0 min	Ia (mm)= 7.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 1.06		

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

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     Unit Hyd Qpeak  (cms)=   1.085

     PEAK FLOW      (cms)=   1.978 (i)
     TIME TO PEAK   (hrs)=   7.833
     RUNOFF VOLUME   (mm)= 138.656
     TOTAL RAINFALL  (mm)= 193.000
     RUNOFF COEFFICIENT  =   0.718

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
Ptotal=193.00 mm	Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

CALIB			
NASHYD (0109)	Area (ha)= 2.78	Curve Number (CN)= 58.0	
ID= 1 DT=10.0 min	Ia (mm)= 8.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.33		

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

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     Unit Hyd Qpeak  (cms)=   0.322

     PEAK FLOW      (cms)=   0.178 (i)
     TIME TO PEAK   (hrs)=   7.000
     RUNOFF VOLUME   (mm)=  92.396
     TOTAL RAINFALL  (mm)= 193.000
     RUNOFF COEFFICIENT  =   0.479

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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| ADD HYD  (  0018)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0107):    32.02   2.511     7.33   136.43
     + ID2= 2 (  0108):    30.12   1.978     7.83   138.66
       ================================================
       ID = 3 (  0018):    62.14   4.360     7.33   137.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0018)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0018):    62.14   4.360     7.33   137.51
     + ID2= 2 (  0109):     2.78   0.178     7.00    92.40
       ================================================
       ID = 1 (  0018):    64.92   4.503     7.33   135.58

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0018)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0018):    64.92   4.503     7.33   135.58
     + ID2= 2 (  0016):  1055.95  49.855     9.17   121.50
       ================================================
       ID = 3 (  0018):  1120.87  53.508     9.17   122.32

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              36c1403c-ad12-43c9-99a6-4550f05ba623\e2c3a379
| Ptotal=193.00 mm |    Comments: * Timmins Storm
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
                0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
                0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
                1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
                1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
                1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
                1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
                2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
                2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
                2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
                2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
                3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

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| CALIB            |
| NASHYD   (  0110)|   Area    (ha)=  74.04   Curve Number   (CN)= 78.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   7.40   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.66

     NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
                0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
                0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
                0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
                0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
                1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
                1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
                1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
                1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
                1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
                1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
                2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
                2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
                2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
                2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
                2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
                2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
                3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

     Unit Hyd Qpeak  (cms)=   4.285

     PEAK FLOW       (cms)=   5.705 (i)
     TIME TO PEAK    (hrs)=   7.333
     RUNOFF VOLUME    (mm)= 133.875
     TOTAL RAINFALL   (mm)= 193.000
     RUNOFF COEFFICIENT   =   0.694

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0019)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0110):    74.04   5.705     7.33   133.88
     + ID2= 2 (  0018):  1120.87  53.508     9.17   122.32
       ================================================
       ID = 3 (  0019):  1194.91  57.561     9.17   123.03

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

 FINISH
================================================================================================
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Fisheries and Oceans Canada | Pêches et Océans Canada

1028 Parsons Road
Edmonton, AB
T6X 0J4

February 5, 2018

Your file / *Votre référence*
N/A

Our file / *Notre référence*
17-HCAA-01461

Towerhill Developments Inc.
Attn: Andrew McLeod
2800 Highway 7
Concord, ON
L4K 1W8

Dear Mr. McLeod:

Subject: Implementation of mitigation measures to avoid and mitigate serious harm to fish – Channel Realignment, Millbrook Development, Tributary of Baxter Creek, Township of Cavan-Monaghan

The Fisheries Protection Program (the Program) of Fisheries and Oceans Canada received your proposal on October 13, 2017.

Your proposal has been reviewed to determine whether it is likely to result in serious harm to fish which is prohibited under subsection 35(1) of the *Fisheries Act*.

Our review consisted of:

- "Request for Review", submitted by Dillon Consulting Ltd, on behalf of Towerhill Developments Inc., dated October 13, 2017.
- "Millbrook Subdivision, Tallis Line and Country Road 10, Millbrook, Ontario, Towerhill Development Inc., Natural Channel Design: Channel Realignment Design Brief", prepared by Water's Edge Environmental Solutions Team Ltd., dated July 26, 2017.
- Meeting with Dillon Consulting Inc., confirming habitat characteristics and barriers to fish passage, on January 17, 2018

We understand that you propose to infill an existing tributary to Baxter Creek near Millbrook, ON and replace it with a newly constructed channel located south of the original. Works will include:

- removal of vegetation for equipment staging and operation;
- infilling 2,470m² of a tributary; and
- constructing 12,896m² of a new, naturalized channel.

Provided that the mitigation measures outlined in the above stated documents are incorporated into your plans, the Program is of the view that your proposal will not result in serious harm to fish. No formal approval is required from the Program under the *Fisheries Act* in order to proceed with your proposal.

If your plans have changed or if the description of your proposal is incomplete, or changes in the future, you should consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review is required by the Program.

Please notify this office at least 10 days before starting your project. A copy of this letter should be kept on site while the work is in progress

If you have any questions, please contact Brett Ellis at (780) 495-2959, or by email at brett.ellis@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Jason Shpeley
A/Senior Fisheries Biologist
Fisheries Protection Program
Fisheries and Oceans Canada

cc. Allen Bensam, Dillon Consulting Ltd.
Whitney Moore, Dillon Consulting Ltd.
Brett Ellis, Fisheries and Oceans Canada

Request for Review

A) Contact information

Name of Business/Company:

Towerhill Developments Inc.

Name of Proponent:

Towerhill Developments Inc. c/o Luka Kot

Mailing address:

2800 Highway 7

City/Town:

Concord

Province/Territory:

ON

Postal Code:

L4K 1W8

Tel. No.:

905-695-0800

Fax No.:

Email:

l.kot@cortelgroup.com

Select additional contact:
Contractor/Agency/Consultant *(if applicable)*:

Dillon Consulting Limited c/o Allen Benson

Mailing address:

235 Yorkland Boulevard
Suite 800

City/Town:

Toronto

Province/Territory:

ON

Postal Code:

M2J 4Y8

Tel. No.:

416-229-4647 ext. 2315

Fax No.:

Email:

abenson@dillon.ca

Is the Proponent the main/primary contact? ○ Yes ◉ No

If no, please enter information for the primary contact or any additional contact.

The primary contact for this project will be Allen Benson (Dillon Consulting)

B) Description of Project

If your project has a life, please provide it.

Millbrook

Is the project in response to an emergency circumstance*? ( ) Yes (•) No

Does your project involve work in water? (•) Yes ( ) No

If yes, is the work below the High Water Mark*? (•) Yes ( ) No

What are you planning to do? Briefly describe all project components you are proposing in or near water.

The property is located at the northwest corner of Fallis Line and County Road 10 in the Township of Cavan-Monaghan, and is proposed for residential development consisting of homes, stormwater management ponds, paved roadways, servicing, etc. (see Figure 1 in Attachment A). As part of the development proposal, realignment of a watercourse running northeast through the centre of the property has been proposed.

The property is located within the Otonabee River Watershed, and more specifically, the Baxter Creek subwatershed. There are a total of four mapped watercourses located within the property, referred to as tributaries A through D for the purposes of this Request for Review; all tributaries of Baxter Creek, approximately 9.2 km to the east (see Figure 2 in Attachment A). Tributary B is proposed for realignment to the west of the proposed development, maintaining the existing confluence with Tributary C downstream to prevent potential impacts to downstream reaches. As no development is proposed for areas associated with tributaries A, C, and D, no direct impacts to fish within those tributaries are anticipated as part of this proposed development.

Realignment of Tributary B will involve creation of approximately 1172.37 m of new, naturalized channel, flowing northeast outside of the western development boundary, followed by infilling of approximately 908 m of existing channel; resulting in an additional ~264 m of channel. Refer to Figure 2 in Attachment A, and the Channel Realignment Design Brief, prepared by Water's Edge in 2017, in Attachment B. The upstream limit of the channel will originate at Fallis Line along the southern property boundary, conveying flows from south of Fallis Line as well as surface water inputs within the property north and east toward Tributary C, and ultimately Baxter Creek. As mentioned, the existing confluence with Tributary C will be maintained at the downstream end of the realigned tributary to prevent potential downstream impacts.

In its current state, Tributary B exists within active agricultural fields, and portions of the tributary are channelized and/or constricted, presenting barriers to fish passage. Refer to photos 3 and 15 in Attachment C. The proposed channel works have been designed such that the proposed infilling of Tributary B will be balanced by the creation of a more protected, naturalized channel, resulting in a net gain of potential fish habitat within the system. The new realigned channel will flow between the development and a wetland to the west with a buffer on either side, effectively providing protection to both the created fish habitat within the realigned channel and the wetland, providing additional habitat and movement corridors for wildlife within the property (see Figure 3 of Attachment A). In addition, application of natural channel design principles will be paired with native tree and shrub plantings to enhance water quality and the quality of habitat to be supported within the realigned channel. Refer to Attachment B for details on the channel realignment and Attachment D for detailed landscaping plans prepared by Terraplan in 2017.

How are you planning to do it? Briefly describe the construction materials, methods and equipment that you plan to use.

As the existing confluence with Tributary C downstream is to be maintained, a coffer dam/ heavy duty silt fence will be installed at the downstream end of the realignment prior to realignment works to prevent erosion and sedimentation into tributaries B and C. The realignment will tie into Tributary B where it enters the woodland area in the approximate area of the the second culvert crossing shown on Figure 2 of Attachment A. The coffer dam/ silt fence will remain in place until construction has been completed. Infilling of Tributary B will be done outside of the fisheries timing window for spring spawning fish species in Ontario (March 15th - July 15th), or in the dry to avoid impacts to fish.

The creation of the realigned channel will be achieved through natural channel design to convey flows from south at Falls Line north and east adjacent to the wetland and outletting into Tributary C at the existing confluence to prevent potential impacts downstream.

Excavators will be used to create the ~1372 m of realigned channel adjacent to the wetland to the west. As mentioned, the channel will include a buffer from the wetland boundary of approximately 30 m, as well as a buffer of approximately 30 m from the development, as shown on Figure 3 of Attachment A. The channel will include a meandering plan-form with a meander belt/ low-flow channel of approximately ~11 m in width, as determined by Water's Edge (2017); including pool-riffle sequences that provide greater aquatic habitat opportunities, when compared to the current existing conditions of Tributary B. Refer to the Water's Edge report included in Attachment B. In addition, native vegetation will be planted to establish robust riparian buffers, offering shade, protection/ cover, and provide a natural filter to the realigned watercourse, as indicated in drawings included in Attachment D. The landscaping plans also include application of native seed mix to be applied within the meander belt/ low-flow channel and around the stormwater pond to provide stabilization of soils ("stormwater pond mixture" as indicated on drawings).

Include a site plan (figure/drawing) showing all project components in and near water.

Are details attached? (•) Yes ( ) No

Identify which work categories apply to your project.

- [ ] Aquaculture Operations
- [ ] Aquatic Vegetation Removal
- [ ] Beaches
- [ ] Berms
- [ ] Blasting / Explosives
- [ ] Boat Houses
- [ ] Boat Launches / Ramps
- [ ] Breakwaters
- [ ] Bridges
- [ ] Cable Crossings
- [ ] Causeways
- [x] Culverts
- [ ] Dams
- [ ] Dewatering / Pumping
- [ ] Docks
- [x] Dredging / Excavation
- [ ] Dykes
- [ ] Fishways / Ladders
- [ ] Flow Modification (hydro)
- [ ] Groundwater Extraction
- [ ] Groynes
- [ ] Habitat Restoration
- [ ] Ice Bridges
- [ ] Log Handling / Dumps
- [ ] Log Removal
- [ ] Moorings
- [ ] Open Water Disposal
- [ ] Piers
- [x] Riparian Vegetation Removal
- [ ] Seismic Work
- [ ] Shoreline Protection
- [ ] Stormwater Management Facilities
- [ ] Surface Water Taking
- [ ] Tailings Impoundment Areas
- [ ] Temporary Structures
- [ ] Turbines
- [ ] Water Control Structures
- [ ] Water Intakes / Fish Screens
- [ ] Water Outfalls
- [x] Watercourse Realignment
- [ ] Weirs
- [ ] Wharves
- [ ] Wind Power Structures
- [x] Other Please Specify: Infilling

Was your project submitted for review to another federal or provincial department or agency? (•) Yes ( ) No

If yes, indicate to whom and associated file number(s).

Towerhill Developments Inc. and Dillon have been in consultation with the Otonabee Region Conservation Authority (ORCA) regarding this proposed project and have provided some details of proposed works. Correspondence with ORCA regarding watercourses within the property has been included in Attachment E.

Other submissions required for this development proposal include an Environmental Impact Study which will is being prepared concurrently with this Request for Review, for submission to ORCA for review.

C) Location of the Project

Coordinates of the proposed project Latitude 44.165063 N Longitude -78.457693 W

OR UTM zone 17T 703247 Easting

4893336 Northing

Include a map clearly indicating the location of the project as well as surrounding features.

Name of Nearest Community (City, Town, Village): Millbrook

Municipality, District, Township, County, Province: Cavan-Monaghan, Ontario

Name of watershed (if applicable): Otonabee River Watershed

Name of watercourse(s) or waterbody(ies) near the proposed project: Baxter Creek

Provide detailed directions to access the project site:

The project location is a large agricultural area located at the northwest corner of Fallis Line and County Road 10, with access off of Fallis Line. The project location is situated in behind the Cavan-Monghan Township building located at 988 County Road 10.

D) Description of the Aquatic Environment

Identify the predominant type of aquatic habitat where the project will take place.

( ) Estuary (Estuarine)

( ) Lake (Lacustrine)

( ) On the bank/shore at the interface between land and water (Riparian)

(•) River or stream (Riverine)

( ) Salt water (Marine)

( ) Wetlands (Palustrine)

Provide a detailed description of biological and physical characteristics of the proposed project site.

Refer to Attachment F.

Include representative photos of affected area (including upstream and downstream area) and clearly identify the location of the project.

E) Potential Effects of the Proposed Project

Have you reviewed the Pathways of Effects (PoE) diagrams (http://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html) that describe the type of cause-effect relationships that apply to your project?

(•) Yes ( ) No

If yes, select the PoEs that apply to your project.

- [ ] Addition or removal of aquatic vegetation
- [x] Change in timing, duration and frequency of flow
- [ ] Cleaning or maintenance of bridges or other structures
- [x] Dredging
- [x] Excavation
- [ ] Fish passage issues
- [x] Grading
- [ ] Marine seismic surveys
- [ ] Organic debris management
- [ ] Placement of marine finfish aquaculture site
- [ ] Placement of material or structures in water
- [x] Riparian Planting
- [ ] Streamside livestock grazing
- [x] Structure removal
- [ ] Use of explosives
- [x] Use of industrial equipment
- [x] Vegetation Clearing
- [ ] Wastewater management
- [ ] Water extraction

Will there be changes (i.e., alteration) in the fish habitat*? (•) Yes ( ) No ( ) Unknown

If yes, provide description.

A length of approximately 908m of Tributary B will be infilled and taken offline. It is unknown whether this tributary contains direct fish habitat, but appears to contribute flows downstream toward Baxter Creek. Portions of Tributary B have been channelized into straightened ditch conveying surface runoff downstream, and several barriers to fish movement have been identified along the tributary (collapsed and partially plugged culverts). To offset the infilling activities, approximately 1172.37 m of new channel will be created through a realignment of the existing channel, enhancing fish habitat potential when compared to the current conditions, and creating an upstream connection at Fallis Line. This work will involve creation of a natural meandering channel with native riparian buffer plantings to provide fish habitat for various species

Will the fish habitat alteration be permanent*? (•) Yes ( ) No ( ) Unknown

Is there likely to be destruction or loss of habitat used by fish? ( ) Yes (•) No ( ) Unknown

What is the footprint (area in square meters) of your project that will take place below the high water mark*?

According to the Channel Realignment Design Brief by Water's Edge in 2017, included in Attachment B, the average bankfull width of Tributary B is 2.72 m.

2.72 m x 908 m (to be filled)= ~2,469.75 square metres

Plus the amount of area to be created below the highwater mark through the realignment is 11 m (meander belt/ low-flow channel width) x 1172.37 m= ~ 12,896 square metres

Total= ~15,364.75 square metres, or ~1.5 hectares

The channel itself (wetted width) within the existing tributary was determined to be ~0.58 m (average).

0.58 m x 908 m= ~526.64 square metres of (potential) direct fish habitat removed.

The realigned channel will be 0.62 m in wetted width. This equals creation of ~961.34 square metres of potential direct fish habitat.

Therefore, there will be a net increase in potential direct fish habitat within the tributary of ~434.70 square metres.

Is your project likely to change water flows or water levels? (•) Yes ( ) No ( ) Unknown

If your project includes withdrawing water, provide source, volume, rate and duration

N/A

If your project includes water control structure, provide the % of flow reduction.

N/A

If your project includes discharge of water, provide source, volume and rate.

N/A

Will your project cause death of fish? ( ) Yes (•) No ( ) Unknown

If yes, how many fish will be killed (for multi-year project, provide average)? What species and lifestages?

N/A- work will be done outside of fisheries timing windows (March 15th- July 15th) or during dry to conditions to avoid harm to fish.

Are there aquatic species at risk (http://www.sararegistry.gc.ca/species/aquatic_e.cfm) present? If yes, which ones?

No Species at Risk have been flagged within this reach of the subwatershed through background review (Fisheries and Oceans Canada Ontario South West Map 6 of 34; MNRF NHIC).

What is the time frame of your project?

The construction will start on 03/01/2018 and end by 12/31/2018

If applicable, the operation will start on MM/DD/YYYY and end by MM/DD/YYYY

If applicable, provide schedule for the maintenance

N/A

If applicable, provide schedule for decommissioning

N/A

Are there additional effects to fish and fish habitat that will happen outside of the time periods identified above? ○ Yes ◉ No

(If yes, provide details)

N/A

Have you considered and incorporated all options for redesigning and relocating your project to avoid negative effects to fish and fish habitat?

◉ Yes ○ No

If yes, describe.

The proposed channel works have been designed such that the proposed infilling of Tributary B will be balanced by creation of a new, realigned naturalized channel, resulting in a net gain of available fish habitat within the system. Tributary B is modified, contains inputs from agricultural runoff, and contains barriers to fish migration. Development as proposed, would not only increase available habitat but will also increase the quality of the direct fish habitat with the implementation of riparian buffers along the newly created channel to act as natural filters for contaminants and runoff into the system.

Have you consulted DFO's Measures to Avoid Harm to Fish and Fish Habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html) to determine which measures apply to your project?

◉ Yes ○ No

Will you be incorporating applicable measures into your project? ◉ Yes ○ No

If yes, identify which ones. If No, identify which ones and provide reasons.

- In-water work will take place outside of the fisheries timing window for this area (March 15- July 15), or under completely dry conditions
- If work is completed outside of the fisheries window, work will not be completed during elevated flow periods due to local rain events, storms or seasonal floods.
- If water is present, flows will be diverted around the work area and fish salvage will be conducted to remove trapped fish, if required
- Effective erosion and sediment controls will be installed prior to construction and maintained throughout the construction period.
- Minimize vegetation removal and re-establish vegetation in disturbed areas to better than pre-construction conditions.
- Any rip-rap protection added to the channels will be clean and free of fine sediments.
- Ensure all equipment on site arrives in a clean condition free of fluid leaks, invasive species and noxious weeds.
- Refuelling and maintenance of machinery to be conducted in a designated area, at least 30 m away from the water to prevent entry of petroleum products, debris, rubble, concrete or other deleterious substances into the water.
- All materials used or generated (e.g., organics, soils, woody debris, temporary stockpiles, construction debris, etc.) will be temporarily stored, handled and disposed of during site preparation, construction and clean-up in a manner that prevents entry into the watercourse.

Have you considered and incorporated additional best practices and mitigation measures recommended in relevant guidelines to avoid negative effects to fish and fish habitat?

○ No ◉ Yes

If Yes, include a list of the guidelines being used to avoid negative effects to fish and fish habitat.

The impacts to surface water bodies such as creeks are related to the reduction of the groundwater baseflow, while water quality concerns are related to human activities such as road salting, minor fuel and oil leaks, fertilizer applications, etc. The property is a minor contributor of baseflow to Baxter Creek, and through promotion of infiltration, and other Low Impact Development (LID) measures within the site, will result in negligible impacts to shallow baseflow and impacts to the creek from a quantity perspective are not expected. Some LID measures being considered for the development include clean roof drainage onto sodded lots. In addition, further LIDs measures such as infiltration trenches may be considered at the detailed design stage, if necessary.

Are there any relevant best practices or mitigation measures that you are unable to incorporate? ○ Yes ◉ No

(If yes, identify which ones.)

N/A

Can you follow appropriate Timing Windows (http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/index-eng.html) for all your project activities below the High Water Mark"?

(●) Yes ( ) No

(If no, provide explanations.)

What residual effects to fish and fish habitat do you foresee after taking into account the avoidance and mitigation measures described above?

A net gain of approximately 434.7 square metres of potential direct fish habitat within the Baxter Creek subwatershed is anticipated. Based on proposed works and the use of appropriate mitigation measures, there is considered to be a low risk of causing serious harm to fish.

F) Signature

I, Allen Benson (print name) certify that the information given on this form is to the best of my knowledge correct and completed.

Signature

29/09/2017

Date

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act* for the purpose of administering the fisheries protection provisions of the *Fisheries Act*. Personal information will be protected under the provisions of the *Privacy Act* and will be stored in the Personal Information Bank DFO-PPU-680. Under the *Privacy Act*, individuals have a right to, and on request shall be given access to any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada's Info Source publications available at www.infosource.gc.ca or in Government of Canada offices. Information other than "personal" information may be accessible or protected as required by the provision of the *Access to Information Act*.

**All definitions are provided in Section G of the Guidance on Submitting a Request for Review*

APPENDIX "E"

Stormwater Management Calculations

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: March 2019

Table E.1: Existing Condition - VO Model Parameters

Subcatchment	Area (ha)	VO5 Routine	TIMP	XIMP	CN II	IA (mm)	Tp (hr)
101	2.11	StandHyd	0.25	0.15	61	5.0	-
102	0.23	StandHyd	0.35	0.25	61	5.0	-
103	36.61	NasHyd	-	-	79	7.1	0.94
104	10.11	NasHyd	-	-	77	7.2	1.26
Total	**49.06**						

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: March 2019

Table E.2: Proposed Condition - VO Model Parameters

Subcatchment	Area (ha)	VO5 Routine	TIMP	XIMP	CN II	IA (mm)	Tp (hr)
101	2.11	StandHyd	0.25	0.15	61	5.0	-
102	0.23	StandHyd	0.35	0.25	61	5.0	-
105	0.59	NasHyd	-	-	61	5.0	0.19
201	2.84	StandHyd	0.75	0.60	61	5.0	-
202	30.25	StandHyd	0.70	0.55	61	5.0	-
203	1.73	StandHyd	0.50	0.50	61	5.0	-
204	0.92	StandHyd	0.60	0.45	61	5.0	-
205	0.97	StandHyd	0.60	0.45	61	5.0	-
[1]206	1.09				N/A		
207	12.81	NasHyd	-	-	61	5.5	1.16
[2]208	1.78	StandHyd	0.65	0.40	61	5.0	-
Total	**53.54**						

Notes:
1) Drainage from *Catchment 206* will be captured and conveyed to the *Phase 1 SWM Pond* via the Fallis Line major and minor system. The *Phase 1 SWM Pond* has been sized to accomadate this area (refer to *Stormwater Management Report, Millbrook Subdivision, Phase 1* , Valdor Engineering Inc., October 2016). *Catchment 206* is therefore not included in the modelling for the *Phase 2 SWM Pond* .
2) The minor system flows (up to and including the 5-year flow) for *Catchment 208* will be captured and conveyed via the site's storm sewer system to a culvert under County Road 10. The major system flows (the 100- minus 5-year flows) will discharge overland to the SWM pond. This is simulated using a *DuHyd* routine in the VO model.

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: March 2019

Table E.3: Calculation of CN Values, Initial Abstractions and Runoff Coefficients

Subcatchment	Area (ha)	Land Use and Land Cover		CN II	Area Weighted CN II	IA (mm)	Area Weighted IA (mm)	C-Value	Area Weighted C-Value
		Type	Area (ha)						
103	36.61	Row Crops (HSG 'B')	32.65	81	**79**	**7**	**7.1**	0.35	**0.34**
		Meadow (HSG 'B')	3.96	58		**8**		0.28	
		Open Space (HSG 'B')	0.00	61		**5**		0.16	
		Other Impervious	0.00	98		**2**		0.95	
104	10.11	Row Crops (HSG 'B')	8.42	81	**77**	**7**	**7.2**	0.35	**0.34**
		Meadow (HSG 'B')	1.69	58		**8**		0.28	
		Open Space (HSG 'B')	0.00	61		**5**		0.16	
		Other Impervious	0.00	98		**2**		0.95	
105	0.59	Row Crops (HSG 'B')	0.00	81	**61**	**7**	**5.0**	0.35	**0.16**
		Meadow (HSG 'B')	0.00	58		**8**		0.28	
		Open Space (HSG 'B')	0.59	61		**5**		0.16	
		Other Impervious	0.00	98		**2**		0.95	
207	12.81	Row Crops (HSG 'B')	0.00	81	**61**	**7**	**5.5**	0.35	**0.18**
		Meadow (HSG 'B')	2.06	58		**8**		0.28	
		Open Space (HSG 'B')	10.75	61		**5**		0.16	
		Other Impervious	0.00	98		**2**		0.95	

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: March 2019

Table E.4: Calculation of Time to Peak (Airport Method)

Subcatchment	C Runoff Coefficient (Area Weighted)	L(m) Catchment Length	Highest Elevation (m)	Lowest Elevation (m)	S(%) Catchment Slope	T_c (min)	T_p (hr)
103	0.34	1220	247.40	234.00	1.10	83.8	0.94
104	0.34	1675	247.20	235.00	0.73	113.1	1.26
105	0.16	80	257.00	253.60	4.25	17.0	0.19
207	0.18	1275	248.00	234.00	1.10	104.2	1.16

Note:

1) T_p calculation is based on the Airport Method: $T_c = 3.26 \times (1.1 - C) \times L^{0.5} / S_w^{0.33}$ and $T_P = 0.67 T_c$

Table E.5
SWM POND STAGE-STORAGE TABLE

Project Name: Millbrook Subdivision, Phase 2
Municipality: Township of Cavan Monaghan
Project No.: 17125
Date: March 2019

Stage Storage Curve						Outlet Structure							
Elevation	Sec Area	Avg Area	Sec Volume	Cumulative Volume	Volume Above NWL		Stage Active	Discharge m^3/s					
(m)	(m^2)	(m^2)	(m^3)	(m^3)	(m^3)		(m)	Orifice #1	Orifice #2 (Weir Flow)	Orifice #2 (Orifice Flow)	Spillway	Total Flow	**Comments:**
						Invert Elevation(m)		241.50	242.30	242.30	243.50		
						Diameter(mm)/Length(m)		170	0.60	0.60	35.00		
						Box Orifice Height (m)		-	0.70	0.70			
						Orifice Area (m^2)		0.0227	0.4200	0.4200			
													Spillway Design: $Q=1.67xLxH^{1.5}$
													Orifice Eq'n: $Q = 0.6A(2gH)^{0.5}$
Forebay Below NWL													
239.50	**275**	**-**	**-**	**0**		**Bottom of Forebay**							
240.50	**823**	**549**	**549**	**549**		-							
241.50	**1,617**	**1,220**	**1,220**	**1,769**		**NWL**							
Main Cell Below NWL													
239.50	**1,173**	**-**	**-**	**0**		**Bottom of Main Cell**							
240.00	**1,908**	**1,541**	**770**	**770**		**-**							
240.50	**2,555**	**2,232**	**1,116**	**1,886**		-							
241.50	**4,096**	**3,326**	**3,326**	**5,212**		**NWL**							
Forebay & Main Cell Above NWL													
241.50	**5,713**	**-**	**-**	**6,981**	**0**	**NWL**	0.00	0.000				**0.000**	**Permanent Pool Provided**
242.00	**7,053**	**6,383**	**3,192**	**10,172**	**3,192**	**-**	0.50	0.039				**0.039**	
242.20	7,656	7,354	1,471	11,643	4,662	**-**	0.70	0.047				**0.047**	
242.30	7,957	7,807	781	12,424	5,443	**Extended Detention**	0.80	0.051	0.000	-		**0.051**	**Extended Detention Provided**
242.40	8,259	8,108	811	13,234	6,254	**-**	0.90	0.054	0.032	-		**0.086**	
242.60	8,862	8,560	1,712	14,946	7,966	**-**	1.10	0.061	0.165	-		**0.225**	
242.80	9,465	9,163	1,833	16,779	9,799	**-**	1.30	0.066	0.354	-		**0.421**	
243.00	**10,068**	**9,766**	**1,953**	**18,733**	**11,752**	**-**	1.50	0.072	0.587	-		**0.659**	
243.20	10,633	10,351	2,070	20,803	13,822	**-**	1.70	0.077	-	0.828		**0.904**	
243.40	11,198	10,916	2,183	22,986	16,005	**-**	1.90	0.081	-	0.967		**1.048**	
243.50	11,481	11,340	1,134	24,120	17,139	**Emergency Spillway**	2.00	0.083		1.029	0.000	**1.113**	**100-year Storage Provided**
243.60	11,764	11,622	1,162	25,282	18,301	**-**	2.10	0.086	-	1.088	1.848	**3.022**	
243.80	12,329	12,046	2,409	27,691	20,711	**-**	2.30	0.090	-	1.197	9.604	**10.891**	
244.00	**12,894**	**12,611**	**2,522**	**30,214**	**23,233**	**Top of Berm**	2.50	0.094	-	1.297	20.665	**22.056**	**Top of Berm**

Millbrook Subdivision
SWM Facility (South Pond)
TOWNSHIP OF CAVAN MONAGHAN
File: 17125
Date: March 2019

VALDOR ENGINEERING INC.
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TABLE E.6: SWM FACILITY SIZING FOR WATER QUALITY CONTROL

Source: Stormwater Management Planning and Design Manual (Table 3.2),
Ministry of the Environment, Ontario, March 2003

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level			
		35%	55%	70%	85%
Level 1	*Infiltration*	25	30	35	40
	Wetlands [2]	80	105	120	140
	Wet Pond [2]	140	190	225	250
	Hybrid Wet Pond/Wetland [4]	110	150	175	195
Level 2	*Infiltration*	20	20	25	30
	Wetlands	60	70	80	90
	Wet Pond	90	110	130	150
	Hybrid Wet Pond/Wetland	75	90	105	120
Level 3	*Infiltration*	20	20	20	20
	Wetlands	60	60	60	60
	Wet Pond	60	75	85	95
	Hybrid Wet Pond/Wetland	60	70	75	80
	Dry Pond	90	150	200	240

1. Table 3.2 was based on specific design parameters (depth, length to width ratio) for each type of end-of-pipe stormwater management facility. The values of these parameters are provided in Appendix I of the Manual. All values in Table 4.1 are based on a 24 hour detention.
2. For wetlands, wet ponds and hybrid ponds, all of the storage, except 40 m^3/ha, in Table 3.2 represents the permanent pool volume. The 40 m^3/ha represents the extended detention storage.
3. For hybrid ponds, 50% to 60% of the permanent pool volume shall be contained in deeper portions of the facility.

PERMANENT POOL CALCULATOR

SWMP Type:	WET POND	(IN - infiltration, WET - wetlands, WP - wet pond, HYB - hybrid wet pond/wetland, DP - dry pond)
Protection Level:	1	(1 - 80% TSS, 2 - 70% TSS, 3 - 60% TSS)
Average Imperviousness:	66.0 %	
Volume Level:	175.7 m^3/ha	Excluding Extended Detention
Area:	37.75 ha	
Total Required Volume:	**6,631** m^3	

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision
File: 17125
Date: March 2019

Table E.7: SWM Pond Extended Detention Requirements

Event	Area (ha)	R.V. (mm)	Required Ext. Det. Volume (m^3)	Provided Ext. Det. Volume (m^3)
25mm 4-hour Chicago Storm	37.75	13.58	5,126	5,443

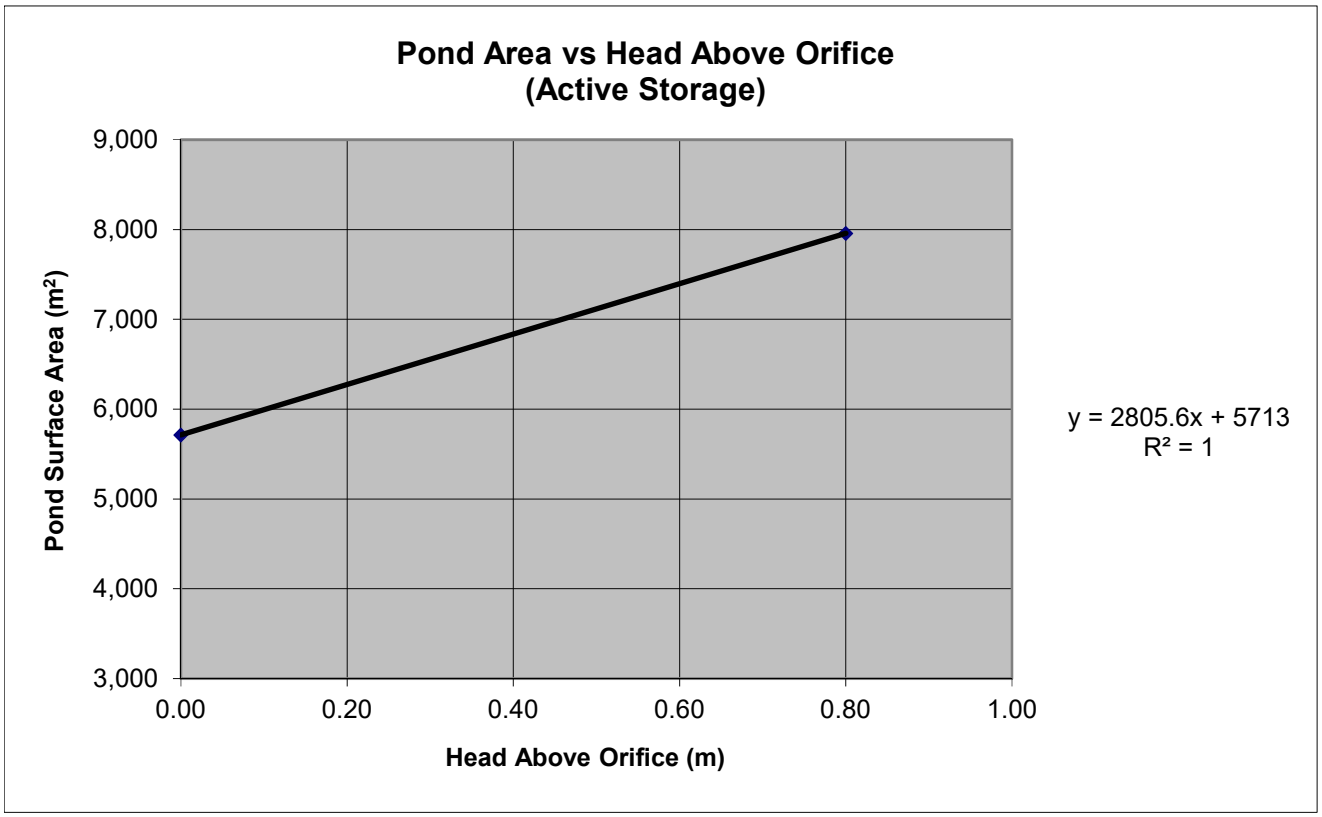
Table E.8: SWM Facility Operation - Extended Detention
Erosion Control Drawdown Time

Project Name: Millbrook Subdivision, Phase 2
Municipality: Township of Cavan Monaghan
Project No.: 17125
Date: March 2019

Extended Detention - SWM Pond

Orifice Sizing		
Orifice Size	170	mm
Orifice Invert	241.50	m
Orifice Area	0.022698	sq. m
$EDL_{erosion}$	242.30	m
NWL	241.50	m
C_2	2805.6	
C_3	5713.0	
h	0.7150	m
Drawdown Time	48.0	hr

$y = mx + b$
$C_2 = m$
$C_3 = b$



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Project: Millbrook Subdivision
File: 17125
Date: March 2019

Table E.9: Critical Storm Analysis

100-Year Storm Distribution	Target Flow (m^3/s)	Storage Provided (m^3)	Proposed Flow (m^3/s)	Storage Used (m^3)	Note
6-hour AES	2.043	11900	2.042	11,925	
12-hour AES	1.820	10300	1.814	10,278	
24-hour AES	1.521	8000	1.520	7,997	
6-hour SCS	**2.078**	**12600**	**2.075**	**12,585**	**Critical Storm**
12-hour SCS	2.080	11900	2.074	11,884	
24-hour SCS	2.048	10900	2.038	10,862	
4-hour Chicago	1.618	11100	1.609	11,042	

Culvert Calculator Report
SWM Pond: 300mm Dia. Bottom Draw Oulet Pipe

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	242.20	m	Headwater Depth/Height	7.49	
Computed Headwater Elevation	241.78	m	Discharge	0.0470	m³/s
Inlet Control HW Elev.	241.76	m	Tailwater Elevation	241.50	m
Outlet Control HW Elev.	241.78	m	Control Type	Outlet Control	

Grades					
Upstream Invert	239.50	m	Downstream Invert	241.50	m
Length	21.00	m	Constructed Slope	-0.095238	m/m

Hydraulic Profile					
Profile	CompositeA2PressureProfile		Depth, Downstream	0.17	m
Slope Type	Adverse		Normal Depth	0.00	m
Flow Regime	Subcritical		Critical Depth	0.17	m
Velocity Downstream	1.15	m/s	Critical Slope	0.005474	m/m

Section					
Section Shape	Circular		Mannings Coefficient	0.012	
Section Material	Corrugated HDPE (Smooth Interior)		Span	0.30	m
Section Size	300 mm		Rise	0.30	m
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	241.78	m	Upstream Velocity Head	0.02	m
Ke	0.50		Entrance Loss	0.01	m

Inlet Control Properties					
Inlet Control HW Elev.	241.76	m	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	0.1	m²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
SWM Pond: 900mm Dia. Outlet Pipe

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	242.00	m	Headwater Depth/Height	1.12	
Computed Headwater Elevation	241.82	m	Discharge	1.0880	m³/s
Inlet Control HW Elev.	241.77	m	Tailwater Elevation	241.00	m
Outlet Control HW Elev.	241.82	m	Control Type	Outlet Control	

Grades					
Upstream Invert	240.80	m	Downstream Invert	240.50	m
Length	60.00	m	Constructed Slope	0.005000	m/m

Hydraulic Profile					
Profile	M2		Depth, Downstream	0.61	m
Slope Type	Mild		Normal Depth	0.63	m
Flow Regime	Subcritical		Critical Depth	0.61	m
Velocity Downstream	2.32	m/s	Critical Slope	0.005272	m/m

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	0.91	m
Section Size	900 mm		Rise	0.91	m
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	241.82	m	Upstream Velocity Head	0.26	m
Ke	0.50		Entrance Loss	0.13	m

Inlet Control Properties					
Inlet Control HW Elev.	241.77	m	Flow Control	Unsubmerged	
Inlet Type	Square edge w/headwall		Area Full	0.7	m²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

SWM Pond: Forebay Weir

Project Description

Solve For	Discharge

Input Data

Headwater Elevation		242.30	m
Crest Elevation		241.50	m
Tailwater Elevation		241.50	m
Crest Surface Type	Gravel		
Crest Breadth		11.00	m
Crest Length		6.00	m

Results

Discharge	7.15	m^3/s
Headwater Height Above Crest	0.80	m
Tailwater Height Above Crest	0.00	m
Weir Coefficient	1.67	SI
Submergence Factor	1.00	
Adjusted Weir Coefficient	1.67	SI
Flow Area	4.80	m^2
Velocity	1.49	m/s
Wetted Perimeter	7.60	m
Top Width	6.00	m

SWM Pond: Emergency Spillway, Uncontrolled 100-year Flow

Project Description

Solve For	Headwater Elevation

Input Data

Discharge		9.71	m³/s
Crest Elevation		243.50	m
Tailwater Elevation		242.25	m
Crest Surface Type	Gravel		
Crest Breadth		4.00	m
Crest Length		35.00	m

Results

Headwater Elevation	243.82	m
Headwater Height Above Crest	0.32	m
Tailwater Height Above Crest	-1.25	m
Weir Coefficient	1.57	SI
Submergence Factor	1.00	
Adjusted Weir Coefficient	1.57	SI
Flow Area	11.04	m²
Velocity	0.88	m/s
Wetted Perimeter	35.63	m
Top Width	35.00	m

SWM Pond: Emergency Spillway, Uncontrolled Regional Flow

Project Description

Solve For	Headwater Elevation

Input Data

Discharge		3.81	m³/s
Crest Elevation		243.50	m
Tailwater Elevation		242.25	m
Crest Surface Type	Gravel		
Crest Breadth		4.00	m
Crest Length		35.00	m

Results

Headwater Elevation	243.67	m
Headwater Height Above Crest	0.17	m
Tailwater Height Above Crest	-1.25	m
Weir Coefficient	1.50	SI
Submergence Factor	1.00	
Adjusted Weir Coefficient	1.50	SI
Flow Area	6.09	m²
Velocity	0.63	m/s
Wetted Perimeter	35.35	m
Top Width	35.00	m

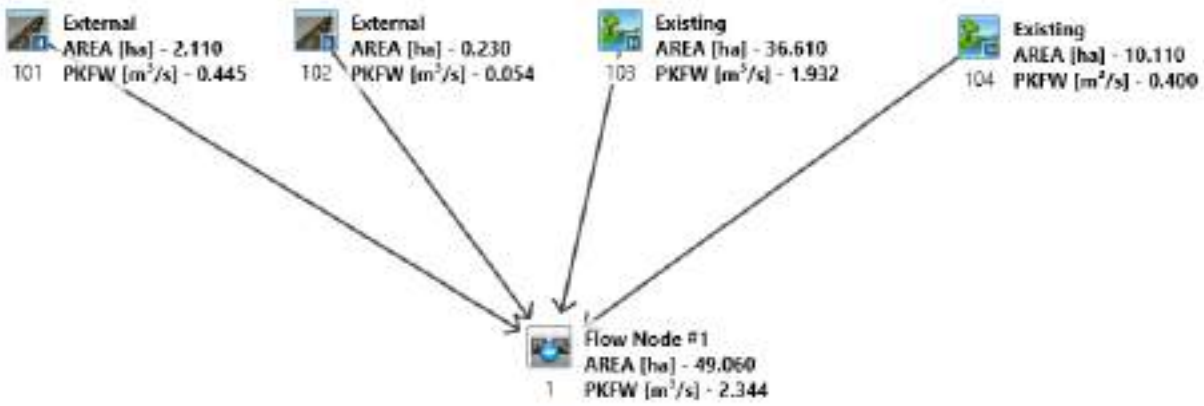

Figure E.1: VO5 Model Schematic – Pre-Development Storm Drainage

```
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==============

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       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
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DATE: 03-13-2019                          TIME: 02:33:44

USER:


COMMENTS: _____________________________________________________________

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  ************************************************
  ** SIMULATION : SCS_06H_002Y                  **
  ************************************************


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|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=  36.61   Curve Number   (CN)= 79.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.10   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.94

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
               0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
               0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
               0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
               0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
               0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
               0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
               0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
               1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
               1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
               1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
               1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
               1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
               1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
               1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
               1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

    Unit Hyd Qpeak  (cms)=   1.488

    PEAK FLOW       (cms)=   0.404 (i)
    TIME TO PEAK    (hrs)=   4.250
    RUNOFF VOLUME    (mm)=  10.073
    TOTAL RAINFALL   (mm)=  38.698
    RUNOFF COEFFICIENT   =   0.260

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
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|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=  10.11   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.20   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.26

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
```

0.417	1.55	2.000	3.87	3.583	8.51	5.17	2.32
0.500	1.55	2.083	3.87	3.667	8.51	5.25	2.32
0.583	1.55	2.167	3.87	3.750	8.51	5.33	1.55
0.667	1.55	2.250	3.87	3.833	3.87	5.42	1.55
0.750	1.55	2.333	4.64	3.917	3.87	5.50	1.55
0.833	2.32	2.417	4.64	4.000	3.87	5.58	1.55
0.917	2.32	2.500	4.64	4.083	3.87	5.67	1.55
1.000	2.32	2.583	4.64	4.167	3.87	5.75	1.55
1.083	2.32	2.667	4.64	4.250	3.87	5.83	1.55
1.167	2.32	2.750	4.64	4.333	3.10	5.92	1.55
1.250	2.32	2.833	23.22	4.417	3.10	6.00	1.55
1.333	2.32	2.917	23.22	4.500	3.10	6.08	1.55
1.417	2.32	3.000	23.22	4.583	3.10	6.17	1.55
1.500	2.32	3.083	60.37	4.667	3.10	6.25	1.55
1.583	2.32	3.167	60.37	4.750	3.10		

Unit Hyd Qpeak (cms)= 0.306

PEAK FLOW (cms)= 0.082 (i)
TIME TO PEAK (hrs)= 4.750
RUNOFF VOLUME (mm)= 9.240
TOTAL RAINFALL (mm)= 38.698
RUNOFF COEFFICIENT = 0.239

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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Ptotal= 38.70 mm | Comments: SCS_06H_002Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	3.87	3.75	8.51	5.50	1.55
0.50	1.55	2.25	3.87	4.00	3.87	5.75	1.55
0.75	1.55	2.50	4.64	4.25	3.87	6.00	1.55
1.00	2.32	2.75	4.64	4.50	3.10	6.25	1.55
1.25	2.32	3.00	23.22	4.75	3.10		
1.50	2.32	3.25	60.37	5.00	2.32		
1.75	2.32	3.50	8.51	5.25	2.32		

CALIB
STANDHYD (0102) | Area (ha)= 0.23
ID= 1 DT= 5.0 min | Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	25.00	20.00
Mannings n	=	0.013	0.035

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	2.32	3.250	60.37	4.83	2.32
0.167	0.00	1.750	2.32	3.333	8.51	4.92	2.32
0.250	0.00	1.833	3.87	3.417	8.51	5.00	2.32
0.333	1.55	1.917	3.87	3.500	8.51	5.08	2.32
0.417	1.55	2.000	3.87	3.583	8.51	5.17	2.32
0.500	1.55	2.083	3.87	3.667	8.51	5.25	2.32
0.583	1.55	2.167	3.87	3.750	8.51	5.33	1.55
0.667	1.55	2.250	3.87	3.833	3.87	5.42	1.55
0.750	1.55	2.333	4.64	3.917	3.87	5.50	1.55
0.833	2.32	2.417	4.64	4.000	3.87	5.58	1.55
0.917	2.32	2.500	4.64	4.083	3.87	5.67	1.55
1.000	2.32	2.583	4.64	4.167	3.87	5.75	1.55
1.083	2.32	2.667	4.64	4.250	3.87	5.83	1.55
1.167	2.32	2.750	4.64	4.333	3.10	5.92	1.55
1.250	2.32	2.833	23.22	4.417	3.10	6.00	1.55
1.333	2.32	2.917	23.22	4.500	3.10	6.08	1.55
1.417	2.32	3.000	23.22	4.583	3.10	6.17	1.55
1.500	2.32	3.083	60.37	4.667	3.10	6.25	1.55
1.583	2.32	3.167	60.37	4.750	3.10		

Max.Eff.Inten.(mm/hr)=	60.37	15.45		
over (min)	5.00	5.00		
Storage Coeff. (min)=	1.11 (ii)	3.67 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.34	0.25		
			TOTALS	
PEAK FLOW (cms)=	0.01	0.01	0.016 (iii)	
TIME TO PEAK (hrs)=	3.25	3.25	3.25	
RUNOFF VOLUME (mm)=	36.70	6.74	14.22	
TOTAL RAINFALL (mm)=	38.70	38.70	38.70	
RUNOFF COEFFICIENT =	0.95	0.17	0.37	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\Valdor\AppData\Local\Temp\a2697325-bdef-42c0-8711-713d1bcc00c1\04261804
Ptotal= 38.70 mm | Comments: SCS_06H_002Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	3.87	3.75	8.51	5.50	1.55
0.50	1.55	2.25	3.87	4.00	3.87	5.75	1.55
0.75	1.55	2.50	4.64	4.25	3.87	6.00	1.55
1.00	2.32	2.75	4.64	4.50	3.10	6.25	1.55
1.25	2.32	3.00	23.22	4.75	3.10		
1.50	2.32	3.25	60.37	5.00	2.32		
1.75	2.32	3.50	8.51	5.25	2.32		

CALIB
STANDHYD (0101) | Area (ha)= 2.11
ID= 1 DT= 5.0 min | Total Imp(%)= 25.00 Dir. Conn.(%)= 15.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.53	1.58
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	25.00	20.00
Mannings n	=	0.013	0.035

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

```
  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
 0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
 0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
 0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
 0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
 0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
 0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
 0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
 0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
 0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
 0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
 0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
 1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
 1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
 1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
 1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
 1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
 1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
 1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
 1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

     Max.Eff.Inten.(mm/hr)=      60.37        14.90
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.11 (ii)    4.44 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.34         0.23
                                                *TOTALS*
     PEAK FLOW       (cms)=      0.05         0.07          0.118 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=     36.70         6.62          11.13
     TOTAL RAINFALL   (mm)=     38.70        38.70          38.70
     RUNOFF COEFFICIENT   =      0.95         0.17           0.29

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  61.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0101):     2.11   0.118     3.25    11.13
      + ID2= 2 (  0102):     0.23   0.016     3.25    14.22
        ================================================
        ID = 3 (  0001):     2.34   0.135     3.25    11.43

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):     2.34   0.135     3.25    11.43
      + ID2= 2 (  0103):    36.61   0.404     4.25    10.07
        ================================================
        ID = 1 (  0001):    38.95   0.415     4.25    10.15

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

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-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):    38.95   0.415     4.25    10.15
      + ID2= 2 (  0104):    10.11   0.082     4.75     9.24
        ================================================
        ID = 3 (  0001):    49.06   0.490     4.33     9.97

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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       V    V   I    SSSSS  U   U    A    L              (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\616d5bad-9b8c-4db5-b447-b4970e5c3e29\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\616d5bad-9b8c-4db5-b447-b4970e5c3e29\scena


DATE: 03-13-2019                          TIME: 02:33:44

USER:


COMMENTS: _____________________________________________________


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  ***********************************************
  ** SIMULATION : SCS_06H_005Y                 **
  ***********************************************


-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
-------------------
  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
 0.25    0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
 0.50    2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
 0.75    2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
 1.00    3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
```

1.25	3.14	3.00	31.44	4.75	4.19	
1.50	3.14	3.25	81.74	5.00	3.14	
1.75	3.14	3.50	11.53	5.25	3.14	

CALIB					
NASHYD (0103)	Area (ha)= 36.61	Curve Number (CN)= 79.0			
ID= 1 DT= 5.0 min	Ia (mm)= 7.10	# of Linear Res.(N)= 3.00			
	U.H. Tp(hrs)= 0.94				

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.14	3.250	81.74	4.83	3.14
0.167	0.00	1.750	3.14	3.333	11.53	4.92	3.14
0.250	0.00	1.833	5.24	3.417	11.53	5.00	3.14
0.333	2.10	1.917	5.24	3.500	11.53	5.08	3.14
0.417	2.10	2.000	5.24	3.583	11.53	5.17	3.14
0.500	2.10	2.083	5.24	3.667	11.53	5.25	3.14
0.583	2.10	2.167	5.24	3.750	11.53	5.33	2.10
0.667	2.10	2.250	5.24	3.833	5.24	5.42	2.10
0.750	2.10	2.333	6.29	3.917	5.24	5.50	2.10
0.833	3.14	2.417	6.29	4.000	5.24	5.58	2.10
0.917	3.14	2.500	6.29	4.083	5.24	5.67	2.10
1.000	3.14	2.583	6.29	4.167	5.24	5.75	2.10
1.083	3.14	2.667	6.29	4.250	5.24	5.83	2.10
1.167	3.14	2.750	6.29	4.333	4.19	5.92	2.10
1.250	3.14	2.833	31.44	4.417	4.19	6.00	2.10
1.333	3.14	2.917	31.44	4.500	4.19	6.08	2.10
1.417	3.14	3.000	31.44	4.583	4.19	6.17	2.10
1.500	3.14	3.083	81.74	4.667	4.19	6.25	2.10
1.583	3.14	3.167	81.74	4.750	4.19		

Unit Hyd Qpeak (cms)= 1.488

PEAK FLOW (cms)= 0.749 (i)
TIME TO PEAK (hrs)= 4.250
RUNOFF VOLUME (mm)= 18.189
TOTAL RAINFALL (mm)= 52.400
RUNOFF COEFFICIENT = 0.347

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppD ata\Local\Temp\ a2697325-bdef-42c0-8711-713d1bcc00c1\99364209
Ptotal= 52.40 mm	Comments: SCS_06H_005Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	5.24	3.75	11.53	5.50	2.10
0.50	2.10	2.25	5.24	4.00	5.24	5.75	2.10
0.75	2.10	2.50	6.29	4.25	5.24	6.00	2.10
1.00	3.14	2.75	6.29	4.50	4.19	6.25	2.10
1.25	3.14	3.00	31.44	4.75	4.19		
1.50	3.14	3.25	81.74	5.00	3.14		
1.75	3.14	3.50	11.53	5.25	3.14		

CALIB					
NASHYD (0104)	Area (ha)= 10.11	Curve Number (CN)= 77.0			
ID= 1 DT= 5.0 min	Ia (mm)= 7.20	# of Linear Res.(N)= 3.00			
	U.H. Tp(hrs)= 1.26				

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.14	3.250	81.74	4.83	3.14
0.167	0.00	1.750	3.14	3.333	11.53	4.92	3.14
0.250	0.00	1.833	5.24	3.417	11.53	5.00	3.14
0.333	2.10	1.917	5.24	3.500	11.53	5.08	3.14
0.417	2.10	2.000	5.24	3.583	11.53	5.17	3.14
0.500	2.10	2.083	5.24	3.667	11.53	5.25	3.14
0.583	2.10	2.167	5.24	3.750	11.53	5.33	2.10
0.667	2.10	2.250	5.24	3.833	5.24	5.42	2.10
0.750	2.10	2.333	6.29	3.917	5.24	5.50	2.10
0.833	3.14	2.417	6.29	4.000	5.24	5.58	2.10
0.917	3.14	2.500	6.29	4.083	5.24	5.67	2.10
1.000	3.14	2.583	6.29	4.167	5.24	5.75	2.10
1.083	3.14	2.667	6.29	4.250	5.24	5.83	2.10
1.167	3.14	2.750	6.29	4.333	4.19	5.92	2.10
1.250	3.14	2.833	31.44	4.417	4.19	6.00	2.10
1.333	3.14	2.917	31.44	4.500	4.19	6.08	2.10
1.417	3.14	3.000	31.44	4.583	4.19	6.17	2.10
1.500	3.14	3.083	81.74	4.667	4.19	6.25	2.10
1.583	3.14	3.167	81.74	4.750	4.19		

Unit Hyd Qpeak (cms)= 0.306

PEAK FLOW (cms)= 0.153 (i)
TIME TO PEAK (hrs)= 4.667
RUNOFF VOLUME (mm)= 16.875
TOTAL RAINFALL (mm)= 52.400
RUNOFF COEFFICIENT = 0.322

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppD ata\Local\Temp\ a2697325-bdef-42c0-8711-713d1bcc00c1\99364209
Ptotal= 52.40 mm	Comments: SCS_06H_005Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	5.24	3.75	11.53	5.50	2.10
0.50	2.10	2.25	5.24	4.00	5.24	5.75	2.10
0.75	2.10	2.50	6.29	4.25	5.24	6.00	2.10
1.00	3.14	2.75	6.29	4.50	4.19	6.25	2.10
1.25	3.14	3.00	31.44	4.75	4.19		
1.50	3.14	3.25	81.74	5.00	3.14		
1.75	3.14	3.50	11.53	5.25	3.14		

CALIB			
STANDHYD (0102)	Area (ha)= 0.23		
ID= 1 DT= 5.0 min	Total Imp(%)= 35.00	Dir. Conn.(%)= 25.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.08	0.15
Dep. Storage (mm)=	2.00	5.00
Average Slope (%)=	2.00	2.00
Length (m)=	25.00	20.00

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     Mannings n           =      0.013        0.035

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                                ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
              0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
              0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
              0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
              0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
              0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
              0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
              0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
              0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
              0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
              0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
              1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
              1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
              1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
              1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
              1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
              1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
              1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
              1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

     Max.Eff.Inten.(mm/hr)=      81.74        27.89
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      0.98 (ii)    3.25 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.34         0.27
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.01         0.01          0.025 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=     50.40        12.24          21.76
     TOTAL RAINFALL   (mm)=     52.40        52.40          52.40
     RUNOFF COEFFICIENT   =      0.96         0.23           0.42

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.25    0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
              0.50    2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
              0.75    2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
              1.00    3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
              1.25    3.14 |  3.00   31.44 |  4.75    4.19 |
              1.50    3.14 |  3.25   81.74 |  5.00    3.14 |
              1.75    3.14 |  3.50   11.53 |  5.25    3.14 |

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| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53          1.58
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       2.00          2.00
     Length            (m)=      25.00         20.00
     Mannings n           =      0.013         0.035

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                                ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
              0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
              0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
              0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
              0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
              0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
              0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
              0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
              0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
              0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
              0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
              1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
              1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
              1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
              1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
              1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
              1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
              1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
              1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

     Max.Eff.Inten.(mm/hr)=      81.74        26.96
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      0.98 (ii)    3.93 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.34         0.24
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.07         0.12          0.192 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=     50.40        12.04          17.79
     TOTAL RAINFALL   (mm)=     52.40        52.40          52.40
     RUNOFF COEFFICIENT   =      0.96         0.23           0.34

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.192     3.25    17.79
     + ID2= 2 (  0102):     0.23   0.025     3.25    21.76
       ==========================================================
       ID = 3 (  0001):     2.34   0.217     3.25    18.18

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

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--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.217     3.25    18.18
     + ID2= 2 (  0103):    36.61   0.749     4.25    18.19
       ====================================================
       ID = 1 (  0001):    38.95   0.766     4.25    18.19

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):    38.95   0.766     4.25    18.19
     + ID2= 2 (  0104):    10.11   0.153     4.67    16.87
       ================================================
       ID = 3 (  0001):    49.06   0.908     4.25    17.92

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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================================================================================
==============

      V    V   I    SSSSS  U   U    A    L             (v 5.1.2000)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\4cbb6d66-a91d-4837-98fb-91aa4f920dea\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\4cbb6d66-a91d-4837-98fb-91aa4f920dea\scena


DATE: 03-13-2019                          TIME: 02:33:44

USER:


COMMENTS: _____________________________________________________


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  ************************************************
  ** SIMULATION : SCS_06H_010Y                  **
  ************************************************

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
                0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
                0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
                1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
                1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
                1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
                1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

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| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=  36.61   Curve Number   (CN)= 79.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.10   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.94

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.69 | 3.250   95.94 |  4.83    3.69
               0.167    0.00 | 1.750    3.69 | 3.333   13.53 |  4.92    3.69
               0.250    0.00 | 1.833    6.15 | 3.417   13.53 |  5.00    3.69
               0.333    2.46 | 1.917    6.15 | 3.500   13.53 |  5.08    3.69
               0.417    2.46 | 2.000    6.15 | 3.583   13.53 |  5.17    3.69
               0.500    2.46 | 2.083    6.15 | 3.667   13.53 |  5.25    3.69
               0.583    2.46 | 2.167    6.15 | 3.750   13.53 |  5.33    2.46
               0.667    2.46 | 2.250    6.15 | 3.833    6.15 |  5.42    2.46
               0.750    2.46 | 2.333    7.38 | 3.917    6.15 |  5.50    2.46
               0.833    3.69 | 2.417    7.38 | 4.000    6.15 |  5.58    2.46
               0.917    3.69 | 2.500    7.38 | 4.083    6.15 |  5.67    2.46
               1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
               1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
               1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
               1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
               1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
               1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
               1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
               1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

    Unit Hyd Qpeak  (cms)=   1.488

    PEAK FLOW       (cms)=   1.010 (i)
    TIME TO PEAK    (hrs)=   4.250
    RUNOFF VOLUME    (mm)=  24.273
    TOTAL RAINFALL   (mm)=  61.500
    RUNOFF COEFFICIENT   =   0.395

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	6.15	3.75	13.53	5.50	2.46
0.50	2.46	2.25	6.15	4.00	6.15	5.75	2.46
0.75	2.46	2.50	7.38	4.25	6.15	6.00	2.46
1.00	3.69	2.75	7.38	4.50	4.92	6.25	2.46
1.25	3.69	3.00	36.90	4.75	4.92		
1.50	3.69	3.25	95.94	5.00	3.69		
1.75	3.69	3.50	13.53	5.25	3.69		

CALIB	NASHYD (0104)	ID= 1 DT= 5.0 min

Area (ha)= 10.11 Curve Number (CN)= 77.0
Ia (mm)= 7.20 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 1.26

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.69	3.250	95.94	4.83	3.69
0.167	0.00	1.750	3.69	3.333	13.53	4.92	3.69
0.250	0.00	1.833	6.15	3.417	13.53	5.00	3.69
0.333	2.46	1.917	6.15	3.500	13.53	5.08	3.69
0.417	2.46	2.000	6.15	3.583	13.53	5.17	3.69
0.500	2.46	2.083	6.15	3.667	13.53	5.25	3.69
0.583	2.46	2.167	6.15	3.750	13.53	5.33	2.46
0.667	2.46	2.250	6.15	3.833	6.15	5.42	2.46
0.750	2.46	2.333	7.38	3.917	6.15	5.50	2.46
0.833	3.69	2.417	7.38	4.000	6.15	5.58	2.46
0.917	3.69	2.500	7.38	4.083	6.15	5.67	2.46
1.000	3.69	2.583	7.38	4.167	6.15	5.75	2.46
1.083	3.69	2.667	7.38	4.250	6.15	5.83	2.46
1.167	3.69	2.750	7.38	4.333	4.92	5.92	2.46
1.250	3.69	2.833	36.90	4.417	4.92	6.00	2.46
1.333	3.69	2.917	36.90	4.500	4.92	6.08	2.46
1.417	3.69	3.000	36.90	4.583	4.92	6.17	2.46
1.500	3.69	3.083	95.94	4.667	4.92	6.25	2.46
1.583	3.69	3.167	95.94	4.750	4.92		

Unit Hyd Qpeak (cms)= 0.306

PEAK FLOW (cms)= 0.207 (i)
TIME TO PEAK (hrs)= 4.667
RUNOFF VOLUME (mm)= 22.651
TOTAL RAINFALL (mm)= 61.500
RUNOFF COEFFICIENT = 0.368

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\a2697325-bdef-42c0-8711-713d1bcc00c1\0488384e
Ptotal= 61.50 mm	Comments: SCS_06H_010Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	6.15	3.75	13.53	5.50	2.46
0.50	2.46	2.25	6.15	4.00	6.15	5.75	2.46
0.75	2.46	2.50	7.38	4.25	6.15	6.00	2.46
1.00	3.69	2.75	7.38	4.50	4.92	6.25	2.46
1.25	3.69	3.00	36.90	4.75	4.92		
1.50	3.69	3.25	95.94	5.00	3.69		
1.75	3.69	3.50	13.53	5.25	3.69		

CALIB	STANDHYD (0102)	ID= 1 DT= 5.0 min

Area (ha)= 0.23
Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	25.00	20.00
Mannings n	=	0.013	0.035

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.69	3.250	95.94	4.83	3.69
0.167	0.00	1.750	3.69	3.333	13.53	4.92	3.69
0.250	0.00	1.833	6.15	3.417	13.53	5.00	3.69
0.333	2.46	1.917	6.15	3.500	13.53	5.08	3.69
0.417	2.46	2.000	6.15	3.583	13.53	5.17	3.69
0.500	2.46	2.083	6.15	3.667	13.53	5.25	3.69
0.583	2.46	2.167	6.15	3.750	13.53	5.33	2.46
0.667	2.46	2.250	6.15	3.833	6.15	5.42	2.46
0.750	2.46	2.333	7.38	3.917	6.15	5.50	2.46
0.833	3.69	2.417	7.38	4.000	6.15	5.58	2.46
0.917	3.69	2.500	7.38	4.083	6.15	5.67	2.46
1.000	3.69	2.583	7.38	4.167	6.15	5.75	2.46
1.083	3.69	2.667	7.38	4.250	6.15	5.83	2.46
1.167	3.69	2.750	7.38	4.333	4.92	5.92	2.46
1.250	3.69	2.833	36.90	4.417	4.92	6.00	2.46
1.333	3.69	2.917	36.90	4.500	4.92	6.08	2.46
1.417	3.69	3.000	36.90	4.583	4.92	6.17	2.46
1.500	3.69	3.083	95.94	4.667	4.92	6.25	2.46
1.583	3.69	3.167	95.94	4.750	4.92		

			TOTALS
Max.Eff.Inten.(mm/hr)=	95.94	37.54	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.92 (ii)	3.05 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.27	
PEAK FLOW (cms)=	0.02	0.02	0.032 (iii)
TIME TO PEAK (hrs)=	3.25	3.25	3.25
RUNOFF VOLUME (mm)=	59.50	16.51	27.26
TOTAL RAINFALL (mm)=	61.50	61.50	61.50
RUNOFF COEFFICIENT =	0.97	0.27	0.44

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\a2697325-bdef-42c0-8711-713d1bcc00c1\0488384e
Ptotal= 61.50 mm	Comments: SCS_06H_010Y

```
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
               0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
               0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
               1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
               1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
               1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
               1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

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--------------------
| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53         1.58
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      25.00        20.00
     Mannings n           =      0.013        0.035

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                         ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.00 | 1.667    3.69 | 3.250   95.94 |  4.83    3.69
              0.167    0.00 | 1.750    3.69 | 3.333   13.53 |  4.92    3.69
              0.250    0.00 | 1.833    6.15 | 3.417   13.53 |  5.00    3.69
              0.333    2.46 | 1.917    6.15 | 3.500   13.53 |  5.08    3.69
              0.417    2.46 | 2.000    6.15 | 3.583   13.53 |  5.17    3.69
              0.500    2.46 | 2.083    6.15 | 3.667   13.53 |  5.25    3.69
              0.583    2.46 | 2.167    6.15 | 3.750   13.53 |  5.33    2.46
              0.667    2.46 | 2.250    6.15 | 3.833    6.15 |  5.42    2.46
              0.750    2.46 | 2.333    7.38 | 3.917    6.15 |  5.50    2.46
              0.833    3.69 | 2.417    7.38 | 4.000    6.15 |  5.58    2.46
              0.917    3.69 | 2.500    7.38 | 4.083    6.15 |  5.67    2.46
              1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
              1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
              1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
              1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
              1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
              1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
              1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
              1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

     Max.Eff.Inten.(mm/hr)=      95.94        36.33
                 over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.92 (ii)    3.69 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.25
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.08         0.16          0.247 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=      59.50        16.26          22.75
     TOTAL RAINFALL   (mm)=      61.50        61.50          61.50
     RUNOFF COEFFICIENT   =       0.97         0.26           0.37

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
             YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.

     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.247     3.25    22.75
     + ID2= 2 (  0102):     0.23   0.032     3.25    27.26
       ================================================
       ID = 3 (  0001):     2.34   0.279     3.25    23.19

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.279     3.25    23.19
     + ID2= 2 (  0103):    36.61   1.010     4.25    24.27
       ================================================
       ID = 1 (  0001):    38.95   1.031     4.25    24.21

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):    38.95   1.031     4.25    24.21
     + ID2= 2 (  0104):    10.11   0.207     4.67    22.65
       ================================================
       ID = 3 (  0001):    49.06   1.224     4.25    23.89

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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==============

       V    V   I    SSSSS  U   U    A    L             (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U A   A  L
         VV     I    SSSSS  UUUUU A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\94a198aa-5c19-45d9-b5fd-1ecc95f4e0bf\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\94a198aa-5c19-45d9-b5fd-1ecc95f4e0bf\scena
```

```
DATE: 03-13-2019                          TIME: 02:33:44

USER:


COMMENTS: _____________________________________________________

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  ************************************************
  ** SIMULATION : SCS_06H_025Y                  **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

--------------------------------------------------------------------------------

-------------------
| CALIB           |
| NASHYD   (  0103)|   Area    (ha)=  36.61   Curve Number   (CN)= 79.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.10   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.94

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
               0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
               0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
               0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
               0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
               0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
               0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
               0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
               0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
               0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
               0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
               1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
               1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
               1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
               1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
               1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
               1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
               1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
               1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

    Unit Hyd Qpeak  (cms)=   1.488

    PEAK FLOW       (cms)=   1.362 (i)
    TIME TO PEAK    (hrs)=   4.167
    RUNOFF VOLUME    (mm)=  32.476
    TOTAL RAINFALL   (mm)=  72.900
    RUNOFF COEFFICIENT   =   0.445

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

--------------------------------------------------------------------------------

-------------------
| CALIB           |
| NASHYD   (  0104)|   Area    (ha)=  10.11   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.20   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   1.26

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
               0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
               0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
               0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
               0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
               0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
               0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
               0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
               0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
               0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
               0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
               1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
               1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
               1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
               1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
               1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
               1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
               1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
               1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

    Unit Hyd Qpeak  (cms)=   0.306

    PEAK FLOW       (cms)=   0.280 (i)
    TIME TO PEAK    (hrs)=   4.583
    RUNOFF VOLUME    (mm)=  30.490
    TOTAL RAINFALL   (mm)=  72.900
    RUNOFF COEFFICIENT   =   0.418

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	7.29	3.75	16.04	5.50	2.92
0.50	2.92	2.25	7.29	4.00	7.29	5.75	2.92
0.75	2.92	2.50	8.75	4.25	7.29	6.00	2.92
1.00	4.37	2.75	8.75	4.50	5.83	6.25	2.92
1.25	4.37	3.00	43.74	4.75	5.83		
1.50	4.37	3.25	113.72	5.00	4.37		
1.75	4.37	3.50	16.04	5.25	4.37		

```
--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.23
|ID= 1 DT= 5.0 min |   Total Imp(%)=  35.00   Dir. Conn.(%)=  25.00
--------------------
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	25.00	20.00
Mannings n	=	0.013	0.035

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	4.37	3.250	113.72	4.83	4.37
0.167	0.00	1.750	4.37	3.333	16.04	4.92	4.37
0.250	0.00	1.833	7.29	3.417	16.04	5.00	4.37
0.333	2.92	1.917	7.29	3.500	16.04	5.08	4.37
0.417	2.92	2.000	7.29	3.583	16.04	5.17	4.37
0.500	2.92	2.083	7.29	3.667	16.04	5.25	4.37
0.583	2.92	2.167	7.29	3.750	16.04	5.33	2.92
0.667	2.92	2.250	7.29	3.833	7.29	5.42	2.92
0.750	2.92	2.333	8.75	3.917	7.29	5.50	2.92
0.833	4.37	2.417	8.75	4.000	7.29	5.58	2.92
0.917	4.37	2.500	8.75	4.083	7.29	5.67	2.92
1.000	4.37	2.583	8.75	4.167	7.29	5.75	2.92
1.083	4.37	2.667	8.75	4.250	7.29	5.83	2.92
1.167	4.37	2.750	8.75	4.333	5.83	5.92	2.92
1.250	4.37	2.833	43.74	4.417	5.83	6.00	2.92
1.333	4.37	2.917	43.74	4.500	5.83	6.08	2.92
1.417	4.37	3.000	43.74	4.583	5.83	6.17	2.92
1.500	4.37	3.083	113.72	4.667	5.83	6.25	2.92
1.583	4.37	3.167	113.72	4.750	5.83		

Max.Eff.Inten.(mm/hr)=		113.72	50.90	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.86 (ii)	2.85 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.28	
				TOTALS
PEAK FLOW	(cms)=	0.02	0.02	0.040 (iii)
TIME TO PEAK	(hrs)=	3.25	3.25	3.25
RUNOFF VOLUME	(mm)=	70.90	22.46	34.57
TOTAL RAINFALL	(mm)=	72.90	72.90	72.90
RUNOFF COEFFICIENT	=	0.97	0.31	0.47

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	7.29	3.75	16.04	5.50	2.92
0.50	2.92	2.25	7.29	4.00	7.29	5.75	2.92
0.75	2.92	2.50	8.75	4.25	7.29	6.00	2.92
1.00	4.37	2.75	8.75	4.50	5.83	6.25	2.92
1.25	4.37	3.00	43.74	4.75	5.83		
1.50	4.37	3.25	113.72	5.00	4.37		
1.75	4.37	3.50	16.04	5.25	4.37		

```
--------------------
| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.53	1.58
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	25.00	20.00
Mannings n	=	0.013	0.035

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	4.37	3.250	113.72	4.83	4.37
0.167	0.00	1.750	4.37	3.333	16.04	4.92	4.37
0.250	0.00	1.833	7.29	3.417	16.04	5.00	4.37
0.333	2.92	1.917	7.29	3.500	16.04	5.08	4.37
0.417	2.92	2.000	7.29	3.583	16.04	5.17	4.37
0.500	2.92	2.083	7.29	3.667	16.04	5.25	4.37
0.583	2.92	2.167	7.29	3.750	16.04	5.33	2.92
0.667	2.92	2.250	7.29	3.833	7.29	5.42	2.92
0.750	2.92	2.333	8.75	3.917	7.29	5.50	2.92
0.833	4.37	2.417	8.75	4.000	7.29	5.58	2.92
0.917	4.37	2.500	8.75	4.083	7.29	5.67	2.92
1.000	4.37	2.583	8.75	4.167	7.29	5.75	2.92
1.083	4.37	2.667	8.75	4.250	7.29	5.83	2.92
1.167	4.37	2.750	8.75	4.333	5.83	5.92	2.92
1.250	4.37	2.833	43.74	4.417	5.83	6.00	2.92
1.333	4.37	2.917	43.74	4.500	5.83	6.08	2.92
1.417	4.37	3.000	43.74	4.583	5.83	6.17	2.92
1.500	4.37	3.083	113.72	4.667	5.83	6.25	2.92
1.583	4.37	3.167	113.72	4.750	5.83		

Max.Eff.Inten.(mm/hr)=		113.72	49.32	
over (min)		5.00	5.00	
Storage Coeff. (min)=		0.86 (ii)	3.45 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.26	
				TOTALS

```
     PEAK FLOW      (cms)=       0.10         0.22          0.323 (iii)
     TIME TO PEAK   (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME   (mm)=      70.90        22.15          29.46
     TOTAL RAINFALL  (mm)=      72.90        72.90          72.90
     RUNOFF COEFFICIENT  =       0.97         0.30           0.40

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.323     3.25    29.46
     + ID2= 2 (  0102):     0.23   0.040     3.25    34.57
       ==================================================
       ID = 3 (  0001):     2.34   0.363     3.25    29.96

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.363     3.25    29.96
     + ID2= 2 (  0103):    36.61   1.362     4.17    32.48
       ==================================================
       ID = 1 (  0001):    38.95   1.390     4.17    32.32

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):    38.95   1.390     4.17    32.32
     + ID2= 2 (  0104):    10.11   0.280     4.58    30.49
       ==================================================
       ID = 3 (  0001):    49.06   1.654     4.25    31.95

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```



```
                    *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\2845786c-d07d-406f-8f15-ebe177051908\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\2845786c-d07d-406f-8f15-ebe177051908\scena


DATE: 03-13-2019                          TIME: 02:33:44

USER:


COMMENTS: _____________________________________________________


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  ************************************************
  ** SIMULATION : SCS_06H_050Y                  **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

--------------------------------------------------------------------------------

-------------------
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=  36.61   Curve Number   (CN)= 79.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.10   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.94

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                                ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
```

0.917	4.88	2.500	9.77	4.083	8.14	5.67	3.26
1.000	4.88	2.583	9.77	4.167	8.14	5.75	3.26
1.083	4.88	2.667	9.77	4.250	8.14	5.83	3.26
1.167	4.88	2.750	9.77	4.333	6.51	5.92	3.26
1.250	4.88	2.833	48.84	4.417	6.51	6.00	3.26
1.333	4.88	2.917	48.84	4.500	6.51	6.08	3.26
1.417	4.88	3.000	48.84	4.583	6.51	6.17	3.26
1.500	4.88	3.083	126.98	4.667	6.51	6.25	3.26
1.583	4.88	3.167	126.98	4.750	6.51		

Unit Hyd Qpeak (cms)= 1.488

PEAK FLOW (cms)= 1.642 (i)
TIME TO PEAK (hrs)= 4.167
RUNOFF VOLUME (mm)= 38.926
TOTAL RAINFALL (mm)= 81.400
RUNOFF COEFFICIENT = 0.478

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\a2697325-bdef-42c0-8711-713d1bcc00c1\a55243cf
Ptotal= 81.40 mm	Comments: SCS_06H_050Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	8.14	3.75	17.91	5.50	3.26
0.50	3.26	2.25	8.14	4.00	8.14	5.75	3.26
0.75	3.26	2.50	9.77	4.25	8.14	6.00	3.26
1.00	4.88	2.75	9.77	4.50	6.51	6.25	3.26
1.25	4.88	3.00	48.84	4.75	6.51		
1.50	4.88	3.25	126.98	5.00	4.88		
1.75	4.88	3.50	17.91	5.25	4.88		

CALIB	
NASHYD (0104)	Area (ha)= 10.11 Curve Number (CN)= 77.0
ID= 1 DT= 5.0 min	Ia (mm)= 7.20 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 1.26

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	4.88	3.250	126.98	4.83	4.88
0.167	0.00	1.750	4.88	3.333	17.91	4.92	4.88
0.250	0.00	1.833	8.14	3.417	17.91	5.00	4.88
0.333	3.26	1.917	8.14	3.500	17.91	5.08	4.88
0.417	3.26	2.000	8.14	3.583	17.91	5.17	4.88
0.500	3.26	2.083	8.14	3.667	17.91	5.25	4.88
0.583	3.26	2.167	8.14	3.750	17.91	5.33	3.26
0.667	3.26	2.250	8.14	3.833	8.14	5.42	3.26
0.750	3.26	2.333	9.77	3.917	8.14	5.50	3.26
0.833	4.88	2.417	9.77	4.000	8.14	5.58	3.26
0.917	4.88	2.500	9.77	4.083	8.14	5.67	3.26
1.000	4.88	2.583	9.77	4.167	8.14	5.75	3.26
1.083	4.88	2.667	9.77	4.250	8.14	5.83	3.26
1.167	4.88	2.750	9.77	4.333	6.51	5.92	3.26
1.250	4.88	2.833	48.84	4.417	6.51	6.00	3.26
1.333	4.88	2.917	48.84	4.500	6.51	6.08	3.26
1.417	4.88	3.000	48.84	4.583	6.51	6.17	3.26
1.500	4.88	3.083	126.98	4.667	6.51	6.25	3.26
1.583	4.88	3.167	126.98	4.750	6.51		

Unit Hyd Qpeak (cms)= 0.306

PEAK FLOW (cms)= 0.339 (i)
TIME TO PEAK (hrs)= 4.583
RUNOFF VOLUME (mm)= 36.687
TOTAL RAINFALL (mm)= 81.400
RUNOFF COEFFICIENT = 0.451

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\a2697325-bdef-42c0-8711-713d1bcc00c1\a55243cf
Ptotal= 81.40 mm	Comments: SCS_06H_050Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	8.14	3.75	17.91	5.50	3.26
0.50	3.26	2.25	8.14	4.00	8.14	5.75	3.26
0.75	3.26	2.50	9.77	4.25	8.14	6.00	3.26
1.00	4.88	2.75	9.77	4.50	6.51	6.25	3.26
1.25	4.88	3.00	48.84	4.75	6.51		
1.50	4.88	3.25	126.98	5.00	4.88		
1.75	4.88	3.50	17.91	5.25	4.88		

CALIB	
STANDHYD (0102)	Area (ha)= 0.23
ID= 1 DT= 5.0 min	Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	25.00	20.00
Mannings n	=	0.013	0.035

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	4.88	3.250	126.98	4.83	4.88
0.167	0.00	1.750	4.88	3.333	17.91	4.92	4.88
0.250	0.00	1.833	8.14	3.417	17.91	5.00	4.88
0.333	3.26	1.917	8.14	3.500	17.91	5.08	4.88
0.417	3.26	2.000	8.14	3.583	17.91	5.17	4.88
0.500	3.26	2.083	8.14	3.667	17.91	5.25	4.88
0.583	3.26	2.167	8.14	3.750	17.91	5.33	3.26
0.667	3.26	2.250	8.14	3.833	8.14	5.42	3.26
0.750	3.26	2.333	9.77	3.917	8.14	5.50	3.26
0.833	4.88	2.417	9.77	4.000	8.14	5.58	3.26
0.917	4.88	2.500	9.77	4.083	8.14	5.67	3.26
1.000	4.88	2.583	9.77	4.167	8.14	5.75	3.26
1.083	4.88	2.667	9.77	4.250	8.14	5.83	3.26
1.167	4.88	2.750	9.77	4.333	6.51	5.92	3.26
1.250	4.88	2.833	48.84	4.417	6.51	6.00	3.26
1.333	4.88	2.917	48.84	4.500	6.51	6.08	3.26
1.417	4.88	3.000	48.84	4.583	6.51	6.17	3.26
1.500	4.88	3.083	126.98	4.667	6.51	6.25	3.26
1.583	4.88	3.167	126.98	4.750	6.51		

```
     Max.Eff.Inten.(mm/hr)=     126.98        61.67
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.82 (ii)    2.73 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.29
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.02         0.03          0.047 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=      79.40        27.27          40.30
     TOTAL RAINFALL   (mm)=      81.40        81.40          81.40
     RUNOFF COEFFICIENT   =       0.98         0.33           0.50

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

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--------------------
| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53         1.58
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      25.00        20.00
     Mannings n           =      0.013        0.035

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
               0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
               1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
               1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
               1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
               1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
               1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
               1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
               1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
               1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Max.Eff.Inten.(mm/hr)=     126.98        59.79
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.82 (ii)    3.30 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.27
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.27          0.382 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=      79.40        26.91          34.78
     TOTAL RAINFALL   (mm)=      81.40        81.40          81.40
     RUNOFF COEFFICIENT   =       0.98         0.33           0.43

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.382     3.25    34.78
     + ID2= 2 (  0102):     0.23   0.047     3.25    40.30
       ================================================
       ID = 3 (  0001):     2.34   0.429     3.25    35.32

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.429     3.25    35.32
     + ID2= 2 (  0103):    36.61   1.642     4.17    38.93
       ================================================
       ID = 1 (  0001):    38.95   1.674     4.17    38.71

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):    38.95   1.674     4.17    38.71
     + ID2= 2 (  0104):    10.11   0.339     4.58    36.69
       ================================================
       ID = 3 (  0001):    49.06   1.992     4.25    38.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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       V    V   I    SSSSS  U   U    A    L              (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\a851414f-5234-4fa9-a513-e19bd2211eae\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\a851414f-5234-4fa9-a513-e19bd2211eae\scena


DATE: 03-13-2019                          TIME: 02:33:44

USER:


COMMENTS: _____________________________________________________________

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  ************************************************
  ** SIMULATION : SCS_06H_100Y                  **
  ************************************************


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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\33e70cb9
| Ptotal= 89.90 mm |    Comments: SCS_06H_100Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.99 |  3.75   19.78 |  5.50    3.60
                0.50    3.60 |  2.25    8.99 |  4.00    8.99 |  5.75    3.60
                0.75    3.60 |  2.50   10.79 |  4.25    8.99 |  6.00    3.60
                1.00    5.39 |  2.75   10.79 |  4.50    7.19 |  6.25    3.60
                1.25    5.39 |  3.00   53.94 |  4.75    7.19 |
                1.50    5.39 |  3.25  140.24 |  5.00    5.39 |
                1.75    5.39 |  3.50   19.78 |  5.25    5.39 |

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--------------------
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=  36.61   Curve Number   (CN)= 79.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.10   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.94

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
               0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
               0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
               0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
               0.417    3.60 | 2.000    8.99 | 3.583   19.78 |  5.17    5.39
               0.500    3.60 | 2.083    8.99 | 3.667   19.78 |  5.25    5.39
               0.583    3.60 | 2.167    8.99 | 3.750   19.78 |  5.33    3.60
               0.667    3.60 | 2.250    8.99 | 3.833    8.99 |  5.42    3.60
               0.750    3.60 | 2.333   10.79 | 3.917    8.99 |  5.50    3.60
               0.833    5.39 | 2.417   10.79 | 4.000    8.99 |  5.58    3.60
               0.917    5.39 | 2.500   10.79 | 4.083    8.99 |  5.67    3.60
               1.000    5.39 | 2.583   10.79 | 4.167    8.99 |  5.75    3.60
               1.083    5.39 | 2.667   10.79 | 4.250    8.99 |  5.83    3.60
               1.167    5.39 | 2.750   10.79 | 4.333    7.19 |  5.92    3.60
               1.250    5.39 | 2.833   53.94 | 4.417    7.19 |  6.00    3.60
               1.333    5.39 | 2.917   53.94 | 4.500    7.19 |  6.08    3.60
               1.417    5.39 | 3.000   53.94 | 4.583    7.19 |  6.17    3.60
               1.500    5.39 | 3.083  140.24 | 4.667    7.19 |  6.25    3.60
               1.583    5.39 | 3.167  140.24 | 4.750    7.19 |

     Unit Hyd Qpeak  (cms)=   1.488

     PEAK FLOW       (cms)=   1.932 (i)
     TIME TO PEAK    (hrs)=   4.167
     RUNOFF VOLUME    (mm)=  45.608
     TOTAL RAINFALL   (mm)=  89.900
     RUNOFF COEFFICIENT   =   0.507

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              a2697325-bdef-42c0-8711-713d1bcc00c1\33e70cb9
| Ptotal= 89.90 mm |    Comments: SCS_06H_100Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.99 |  3.75   19.78 |  5.50    3.60
                0.50    3.60 |  2.25    8.99 |  4.00    8.99 |  5.75    3.60
                0.75    3.60 |  2.50   10.79 |  4.25    8.99 |  6.00    3.60
                1.00    5.39 |  2.75   10.79 |  4.50    7.19 |  6.25    3.60
                1.25    5.39 |  3.00   53.94 |  4.75    7.19 |
                1.50    5.39 |  3.25  140.24 |  5.00    5.39 |
                1.75    5.39 |  3.50   19.78 |  5.25    5.39 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=  10.11   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.20   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.26

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
               0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
               0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
               0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
```

0.417	3.60	2.000	8.99	3.583	19.78	5.17	5.39
0.500	3.60	2.083	8.99	3.667	19.78	5.25	5.39
0.583	3.60	2.167	8.99	3.750	19.78	5.33	3.60
0.667	3.60	2.250	8.99	3.833	8.99	5.42	3.60
0.750	3.60	2.333	10.79	3.917	8.99	5.50	3.60
0.833	5.39	2.417	10.79	4.000	8.99	5.58	3.60
0.917	5.39	2.500	10.79	4.083	8.99	5.67	3.60
1.000	5.39	2.583	10.79	4.167	8.99	5.75	3.60
1.083	5.39	2.667	10.79	4.250	8.99	5.83	3.60
1.167	5.39	2.750	10.79	4.333	7.19	5.92	3.60
1.250	5.39	2.833	53.94	4.417	7.19	6.00	3.60
1.333	5.39	2.917	53.94	4.500	7.19	6.08	3.60
1.417	5.39	3.000	53.94	4.583	7.19	6.17	3.60
1.500	5.39	3.083	140.24	4.667	7.19	6.25	3.60
1.583	5.39	3.167	140.24	4.750	7.19		

Unit Hyd Qpeak (cms)= 0.306

PEAK FLOW (cms)= 0.400 (i)
TIME TO PEAK (hrs)= 4.583
RUNOFF VOLUME (mm)= 43.131
TOTAL RAINFALL (mm)= 89.900
RUNOFF COEFFICIENT = 0.480

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\a2697325-bdef-42c0-8711-713d1bcc00c1\33e70cb9
Ptotal= 89.90 mm	Comments: SCS_06H_100Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	8.99	3.75	19.78	5.50	3.60
0.50	3.60	2.25	8.99	4.00	8.99	5.75	3.60
0.75	3.60	2.50	10.79	4.25	8.99	6.00	3.60
1.00	5.39	2.75	10.79	4.50	7.19	6.25	3.60
1.25	5.39	3.00	53.94	4.75	7.19		
1.50	5.39	3.25	140.24	5.00	5.39		
1.75	5.39	3.50	19.78	5.25	5.39		

CALIB	
STANDHYD (0102)	Area (ha)= 0.23
ID= 1 DT= 5.0 min	Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	25.00	20.00
Mannings n	=	0.013	0.035

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	5.39	3.250	140.24	4.83	5.39
0.167	0.00	1.750	5.39	3.333	19.78	4.92	5.39
0.250	0.00	1.833	8.99	3.417	19.78	5.00	5.39
0.333	3.60	1.917	8.99	3.500	19.78	5.08	5.39
0.417	3.60	2.000	8.99	3.583	19.78	5.17	5.39
0.500	3.60	2.083	8.99	3.667	19.78	5.25	5.39
0.583	3.60	2.167	8.99	3.750	19.78	5.33	3.60
0.667	3.60	2.250	8.99	3.833	8.99	5.42	3.60
0.750	3.60	2.333	10.79	3.917	8.99	5.50	3.60
0.833	5.39	2.417	10.79	4.000	8.99	5.58	3.60
0.917	5.39	2.500	10.79	4.083	8.99	5.67	3.60
1.000	5.39	2.583	10.79	4.167	8.99	5.75	3.60
1.083	5.39	2.667	10.79	4.250	8.99	5.83	3.60
1.167	5.39	2.750	10.79	4.333	7.19	5.92	3.60
1.250	5.39	2.833	53.94	4.417	7.19	6.00	3.60
1.333	5.39	2.917	53.94	4.500	7.19	6.08	3.60
1.417	5.39	3.000	53.94	4.583	7.19	6.17	3.60
1.500	5.39	3.083	140.24	4.667	7.19	6.25	3.60
1.583	5.39	3.167	140.24	4.750	7.19		

			TOTALS
Max.Eff.Inten.(mm/hr)=	140.24	73.02	
over (min)	5.00	5.00	
Storage Coeff. (min)=	0.79 (ii)	2.62 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.34	0.29	
PEAK FLOW (cms)=	0.02	0.03	0.054 (iii)
TIME TO PEAK (hrs)=	3.25	3.25	3.25
RUNOFF VOLUME (mm)=	87.90	32.35	46.24
TOTAL RAINFALL (mm)=	89.90	89.90	89.90
RUNOFF COEFFICIENT =	0.98	0.36	0.51

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\a2697325-bdef-42c0-8711-713d1bcc00c1\33e70cb9
Ptotal= 89.90 mm	Comments: SCS_06H_100Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	8.99	3.75	19.78	5.50	3.60
0.50	3.60	2.25	8.99	4.00	8.99	5.75	3.60
0.75	3.60	2.50	10.79	4.25	8.99	6.00	3.60
1.00	5.39	2.75	10.79	4.50	7.19	6.25	3.60
1.25	5.39	3.00	53.94	4.75	7.19		
1.50	5.39	3.25	140.24	5.00	5.39		
1.75	5.39	3.50	19.78	5.25	5.39		

CALIB	
STANDHYD (0101)	Area (ha)= 2.11
ID= 1 DT= 5.0 min	Total Imp(%)= 25.00 Dir. Conn.(%)= 15.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.53	1.58
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	25.00	20.00
Mannings n	=	0.013	0.035

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

```
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
               0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
               0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
               0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
               0.417    3.60 | 2.000    8.99 | 3.583   19.78 |  5.17    5.39
               0.500    3.60 | 2.083    8.99 | 3.667   19.78 |  5.25    5.39
               0.583    3.60 | 2.167    8.99 | 3.750   19.78 |  5.33    3.60
               0.667    3.60 | 2.250    8.99 | 3.833    8.99 |  5.42    3.60
               0.750    3.60 | 2.333   10.79 | 3.917    8.99 |  5.50    3.60
               0.833    5.39 | 2.417   10.79 | 4.000    8.99 |  5.58    3.60
               0.917    5.39 | 2.500   10.79 | 4.083    8.99 |  5.67    3.60
               1.000    5.39 | 2.583   10.79 | 4.167    8.99 |  5.75    3.60
               1.083    5.39 | 2.667   10.79 | 4.250    8.99 |  5.83    3.60
               1.167    5.39 | 2.750   10.79 | 4.333    7.19 |  5.92    3.60
               1.250    5.39 | 2.833   53.94 | 4.417    7.19 |  6.00    3.60
               1.333    5.39 | 2.917   53.94 | 4.500    7.19 |  6.08    3.60
               1.417    5.39 | 3.000   53.94 | 4.583    7.19 |  6.17    3.60
               1.500    5.39 | 3.083  140.24 | 4.667    7.19 |  6.25    3.60
               1.583    5.39 | 3.167  140.24 | 4.750    7.19 |

     Max.Eff.Inten.(mm/hr)=     140.24        70.84
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       0.79 (ii)    3.17 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.27
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.12         0.32          0.445 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=      87.90        31.94          40.34
     TOTAL RAINFALL   (mm)=      89.90        89.90          89.90
     RUNOFF COEFFICIENT   =       0.98         0.36           0.45

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  61.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0101):     2.11   0.445     3.25    40.34
      + ID2= 2 (  0102):     0.23   0.054     3.25    46.24
        ====================================================
        ID = 3 (  0001):     2.34   0.499     3.25    40.92

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):     2.34   0.499     3.25    40.92
      + ID2= 2 (  0103):    36.61   1.932     4.17    45.61
        ====================================================
        ID = 1 (  0001):    38.95   1.970     4.17    45.33

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):    38.95   1.970     4.17    45.33
      + ID2= 2 (  0104):    10.11   0.400     4.58    43.13
        ====================================================
        ID = 3 (  0001):    49.06   2.344     4.25    44.87

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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 FINISH
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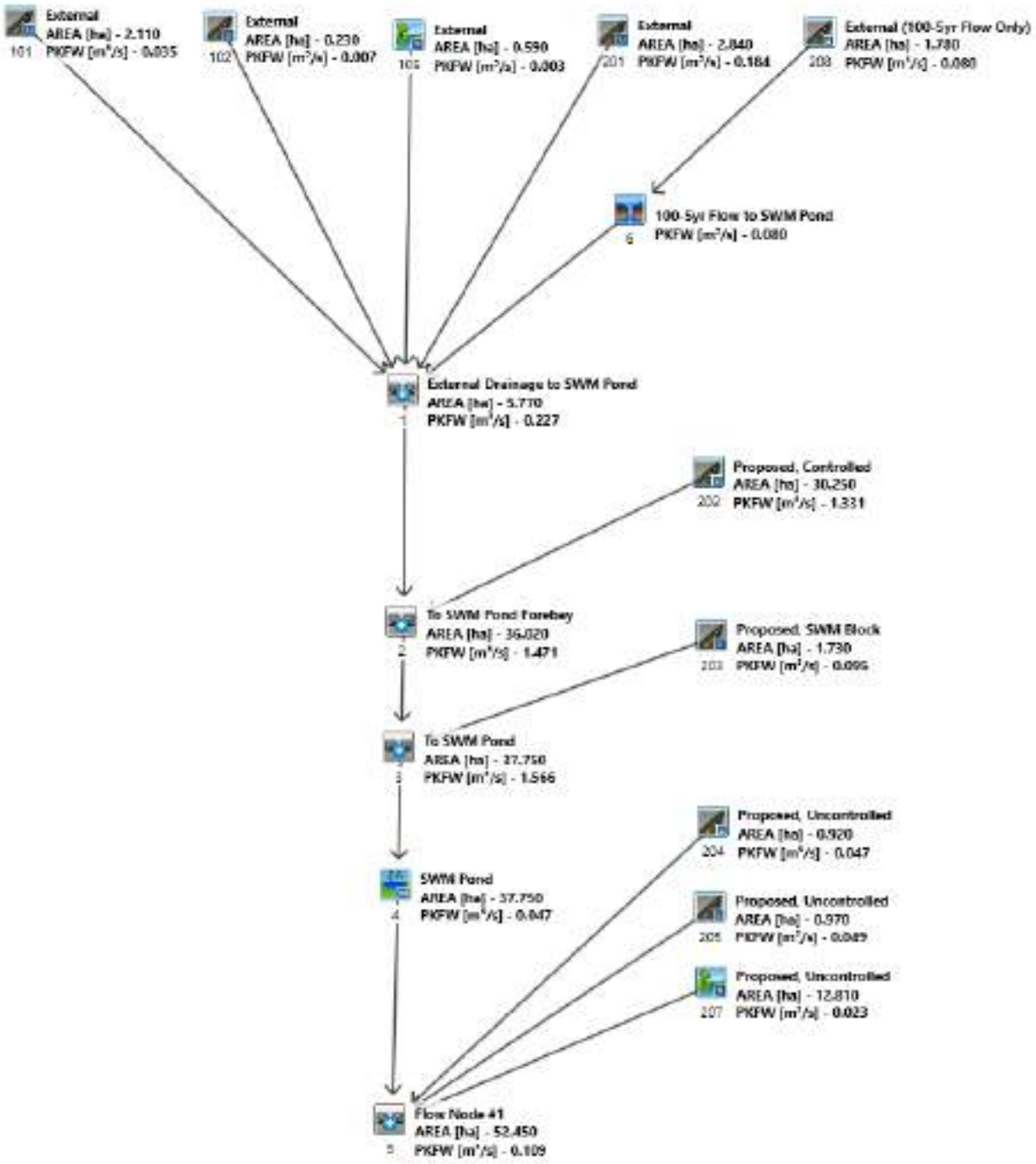

Figure E.2: VO5 Model Schematic – Post-Development Storm Drainage

```
================================================================================
==============

       V    V   I    SSSSS  U   U    A    L              (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\3e549367-ffd3-4a6c-a354-2e0bc2ae4344\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\3e549367-ffd3-4a6c-a354-2e0bc2ae4344\scena


DATE: 03-13-2019                          TIME: 02:36:06

USER:


COMMENTS: _____________________________________________________________


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  ************************************************
  ** SIMULATION : 25mmchi                       **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
| Ptotal= 25.02 mm |    Comments: 25mm CHICAGO Storm
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    2.17 |  1.17    6.20 |  2.17    5.62 |  3.17    2.95
                0.33    2.38 |  1.33   12.18 |  2.33    4.80 |  3.33    2.76
                0.50    2.66 |  1.50   41.67 |  2.50    4.21 |  3.50    2.62
                0.67    3.03 |  1.67   15.28 |  2.67    3.78 |  3.67    2.47
                0.83    3.58 |  1.83    9.22 |  2.83    3.45 |  3.83    2.35
                1.00    4.47 |  2.00    6.88 |  3.00    3.18 |  4.00    2.23

--------------------------------------------------------------------------------

-------------------
| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   0.59   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.19

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.17 | 1.083    6.20 | 2.083    5.62 |  3.08    2.95
               0.167    2.17 | 1.167    6.20 | 2.167    5.62 |  3.17    2.95
               0.250    2.38 | 1.250   12.18 | 2.250    4.80 |  3.25    2.76
               0.333    2.38 | 1.333   12.18 | 2.333    4.80 |  3.33    2.76
               0.417    2.66 | 1.417   41.67 | 2.417    4.21 |  3.42    2.62
               0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
               0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
               0.667    3.03 | 1.667   15.28 | 2.667    3.78 |  3.67    2.47
               0.750    3.58 | 1.750    9.22 | 2.750    3.45 |  3.75    2.35
               0.833    3.58 | 1.833    9.22 | 2.833    3.45 |  3.83    2.35
               0.917    4.47 | 1.917    6.88 | 2.917    3.18 |  3.92    2.23
               1.000    4.47 | 2.000    6.88 | 3.000    3.18 |  4.00    2.23

     Unit Hyd Qpeak  (cms)=   0.119

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   1.750
     RUNOFF VOLUME    (mm)=   2.192
     TOTAL RAINFALL   (mm)=  25.023
     RUNOFF COEFFICIENT   =   0.088

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
| Ptotal= 25.02 mm |    Comments: 25mm CHICAGO Storm
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    2.17 |  1.17    6.20 |  2.17    5.62 |  3.17    2.95
                0.33    2.38 |  1.33   12.18 |  2.33    4.80 |  3.33    2.76
                0.50    2.66 |  1.50   41.67 |  2.50    4.21 |  3.50    2.62
                0.67    3.03 |  1.67   15.28 |  2.67    3.78 |  3.67    2.47
                0.83    3.58 |  1.83    9.22 |  2.83    3.45 |  3.83    2.35
                1.00    4.47 |  2.00    6.88 |  3.00    3.18 |  4.00    2.23

--------------------------------------------------------------------------------

-------------------
| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
-------------------

                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53          1.58
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     118.60         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.17 | 1.083    6.20 | 2.083    5.62 |  3.08    2.95
               0.167    2.17 | 1.167    6.20 | 2.167    5.62 |  3.17    2.95
               0.250    2.38 | 1.250   12.18 | 2.250    4.80 |  3.25    2.76
               0.333    2.38 | 1.333   12.18 | 2.333    4.80 |  3.33    2.76
               0.417    2.66 | 1.417   41.67 | 2.417    4.21 |  3.42    2.62
               0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
               0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
```

0.667	3.03	1.667	15.28	2.667	3.78	3.67	2.47
0.750	3.58	1.750	9.22	2.750	3.45	3.75	2.35
0.833	3.58	1.833	9.22	2.833	3.45	3.83	2.35
0.917	4.47	1.917	6.88	2.917	3.18	3.92	2.23
1.000	4.47	2.000	6.88	3.000	3.18	4.00	2.23

Max.Eff.Inten.(mm/hr)=	41.67	2.16	
over (min)	5.00	40.00	
Storage Coeff. (min)=	4.02 (ii)	36.76 (ii)	
Unit Hyd. Tpeak (min)=	5.00	40.00	
Unit Hyd. peak (cms)=	0.24	0.03	
			TOTALS
PEAK FLOW (cms)=	0.03	0.01	0.035 (iii)
TIME TO PEAK (hrs)=	1.50	2.33	1.50
RUNOFF VOLUME (mm)=	23.02	2.59	5.65
TOTAL RAINFALL (mm)=	25.02	25.02	25.02
RUNOFF COEFFICIENT =	0.92	0.10	0.23

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
Ptotal= 25.02 mm	Comments: 25mm CHICAGO Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.17	1.17	6.20	2.17	5.62	3.17	2.95
0.33	2.38	1.33	12.18	2.33	4.80	3.33	2.76
0.50	2.66	1.50	41.67	2.50	4.21	3.50	2.62
0.67	3.03	1.67	15.28	2.67	3.78	3.67	2.47
0.83	3.58	1.83	9.22	2.83	3.45	3.83	2.35
1.00	4.47	2.00	6.88	3.00	3.18	4.00	2.23

CALIB STANDHYD (0102)	Area (ha)= 0.23
ID= 1 DT= 5.0 min	Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	39.16	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.17	1.083	6.20	2.083	5.62	3.08	2.95
0.167	2.17	1.167	6.20	2.167	5.62	3.17	2.95
0.250	2.38	1.250	12.18	2.250	4.80	3.25	2.76
0.333	2.38	1.333	12.18	2.333	4.80	3.33	2.76
0.417	2.66	1.417	41.67	2.417	4.21	3.42	2.62
0.500	2.66	1.500	41.67	2.500	4.21	3.50	2.62
0.583	3.03	1.583	15.28	2.583	3.78	3.58	2.47
0.667	3.03	1.667	15.28	2.667	3.78	3.67	2.47
0.750	3.58	1.750	9.22	2.750	3.45	3.75	2.35
0.833	3.58	1.833	9.22	2.833	3.45	3.83	2.35
0.917	4.47	1.917	6.88	2.917	3.18	3.92	2.23
1.000	4.47	2.000	6.88	3.000	3.18	4.00	2.23

Max.Eff.Inten.(mm/hr)=	41.67	2.25	
over (min)	5.00	35.00	
Storage Coeff. (min)=	2.07 (ii)	34.24 (ii)	
Unit Hyd. Tpeak (min)=	5.00	35.00	
Unit Hyd. peak (cms)=	0.31	0.03	
			TOTALS
PEAK FLOW (cms)=	0.01	0.00	0.007 (iii)
TIME TO PEAK (hrs)=	1.50	2.25	1.50
RUNOFF VOLUME (mm)=	23.02	2.65	7.66
TOTAL RAINFALL (mm)=	25.02	25.02	25.02
RUNOFF COEFFICIENT =	0.92	0.11	0.31

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
Ptotal= 25.02 mm	Comments: 25mm CHICAGO Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.17	1.17	6.20	2.17	5.62	3.17	2.95
0.33	2.38	1.33	12.18	2.33	4.80	3.33	2.76
0.50	2.66	1.50	41.67	2.50	4.21	3.50	2.62
0.67	3.03	1.67	15.28	2.67	3.78	3.67	2.47
0.83	3.58	1.83	9.22	2.83	3.45	3.83	2.35
1.00	4.47	2.00	6.88	3.00	3.18	4.00	2.23

CALIB STANDHYD (0201)	Area (ha)= 2.84
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 60.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.13	0.71
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	137.60	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.17	1.083	6.20	2.083	5.62	3.08	2.95
0.167	2.17	1.167	6.20	2.167	5.62	3.17	2.95
0.250	2.38	1.250	12.18	2.250	4.80	3.25	2.76
0.333	2.38	1.333	12.18	2.333	4.80	3.33	2.76
0.417	2.66	1.417	41.67	2.417	4.21	3.42	2.62

```
               0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
               0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
               0.667    3.03 | 1.667   15.28 | 2.667    3.78 |  3.67    2.47
               0.750    3.58 | 1.750    9.22 | 2.750    3.45 |  3.75    2.35
               0.833    3.58 | 1.833    9.22 | 2.833    3.45 |  3.83    2.35
               0.917    4.47 | 1.917    6.88 | 2.917    3.18 |  3.92    2.23
               1.000    4.47 | 2.000    6.88 | 3.000    3.18 |  4.00    2.23

     Max.Eff.Inten.(mm/hr)=      41.67         5.54
               over (min)        5.00        30.00
     Storage Coeff.  (min)=       4.39 (ii)   26.84 (ii)
     Unit Hyd. Tpeak (min)=       5.00        30.00
     Unit Hyd. peak  (cms)=       0.23         0.04
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.18         0.01          0.184 (iii)
     TIME TO PEAK    (hrs)=       1.50         2.08           1.50
     RUNOFF VOLUME    (mm)=      23.02         3.89          15.36
     TOTAL RAINFALL   (mm)=      25.02        25.02          25.02
     RUNOFF COEFFICIENT   =       0.92         0.16           0.61

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
| Ptotal= 25.02 mm |    Comments: 25mm CHICAGO Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    2.17 |  1.17    6.20 |  2.17    5.62 |  3.17    2.95
                0.33    2.38 |  1.33   12.18 |  2.33    4.80 |  3.33    2.76
                0.50    2.66 |  1.50   41.67 |  2.50    4.21 |  3.50    2.62
                0.67    3.03 |  1.67   15.28 |  2.67    3.78 |  3.67    2.47
                0.83    3.58 |  1.83    9.22 |  2.83    3.45 |  3.83    2.35
                1.00    4.47 |  2.00    6.88 |  3.00    3.18 |  4.00    2.23

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-------------------
| CALIB           |
| STANDHYD (  0208)|   Area    (ha)=   1.78
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  40.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.16         0.62
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     108.93        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                            ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.17 | 1.083    6.20 | 2.083    5.62 |  3.08    2.95
               0.167    2.17 | 1.167    6.20 | 2.167    5.62 |  3.17    2.95
               0.250    2.38 | 1.250   12.18 | 2.250    4.80 |  3.25    2.76
               0.333    2.38 | 1.333   12.18 | 2.333    4.80 |  3.33    2.76
               0.417    2.66 | 1.417   41.67 | 2.417    4.21 |  3.42    2.62
               0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
               0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
               0.667    3.03 | 1.667   15.28 | 2.667    3.78 |  3.67    2.47
               0.750    3.58 | 1.750    9.22 | 2.750    3.45 |  3.75    2.35
               0.833    3.58 | 1.833    9.22 | 2.833    3.45 |  3.83    2.35
               0.917    4.47 | 1.917    6.88 | 2.917    3.18 |  3.92    2.23
               1.000    4.47 | 2.000    6.88 | 3.000    3.18 |  4.00    2.23

     Max.Eff.Inten.(mm/hr)=      41.67         6.46
               over (min)        5.00        25.00
     Storage Coeff.  (min)=       3.82 (ii)   24.94 (ii)
     Unit Hyd. Tpeak (min)=       5.00        25.00
     Unit Hyd. peak  (cms)=       0.25         0.05
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.08         0.01          0.080 (iii)
     TIME TO PEAK    (hrs)=       1.50         2.00           1.50
     RUNOFF VOLUME    (mm)=      23.02         4.18          11.71
     TOTAL RAINFALL   (mm)=      25.02        25.02          25.02
     RUNOFF COEFFICIENT   =       0.92         0.17           0.47

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| DUHYD    (  0006)|
| Inlet Cap.= 0.211|
| #of Inlets=     1|
| Total(cms)=   0.2|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   1.78      0.08      1.50   11.71
     ================================================
     MAJOR SYS.(ID= 2):   0.00      0.00      0.00    0.00
     MINOR SYS.(ID= 3):   1.78      0.08      1.50   11.71

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.035     1.50     5.65
     + ID2= 2 (  0102):     0.23   0.007     1.50     7.66
       ================================================
       ID = 3 (  0001):     2.34   0.042     1.50     5.84

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.042     1.50     5.84
     + ID2= 2 (  0105):     0.59   0.003     1.75     2.19
       ================================================
       ID = 1 (  0001):     2.93   0.043     1.50     5.11

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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```

```
--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     2.93   0.043     1.50     5.11
     + ID2= 2 (  0201):     2.84   0.184     1.50    15.36
       ====================================================
       ID = 3 (  0001):     5.77   0.227     1.50    10.16

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   0006 <ID= 2> IS DRY.
*** W A R N I N G :  HYDROGRAPH   0001 = HYDROGRAPH 0003
       ID1= 3 (  0001):     5.77   0.227     1.50    10.16
     + ID2= 2 (  0006):     0.00   0.000     0.00     0.00
       ====================================================
       ID = 1 (  0001):     5.77   0.227     1.50    10.16

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
| Ptotal= 25.02 mm |    Comments: 25mm CHICAGO Storm
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.17    2.17 |  1.17    6.20 |  2.17    5.62 |  3.17    2.95
               0.33    2.38 |  1.33   12.18 |  2.33    4.80 |  3.33    2.76
               0.50    2.66 |  1.50   41.67 |  2.50    4.21 |  3.50    2.62
               0.67    3.03 |  1.67   15.28 |  2.67    3.78 |  3.67    2.47
               0.83    3.58 |  1.83    9.22 |  2.83    3.45 |  3.83    2.35
               1.00    4.47 |  2.00    6.88 |  3.00    3.18 |  4.00    2.23
```

```
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=  30.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  55.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     21.18         9.08
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    449.07        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    2.17 | 1.083    6.20 | 2.083    5.62 |  3.08    2.95
              0.167    2.17 | 1.167    6.20 | 2.167    5.62 |  3.17    2.95
              0.250    2.38 | 1.250   12.18 | 2.250    4.80 |  3.25    2.76
              0.333    2.38 | 1.333   12.18 | 2.333    4.80 |  3.33    2.76
              0.417    2.66 | 1.417   41.67 | 2.417    4.21 |  3.42    2.62
              0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
              0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
              0.667    3.03 | 1.667   15.28 | 2.667    3.78 |  3.67    2.47
              0.750    3.58 | 1.750    9.22 | 2.750    3.45 |  3.75    2.35
              0.833    3.58 | 1.833    9.22 | 2.833    3.45 |  3.83    2.35
              0.917    4.47 | 1.917    6.88 | 2.917    3.18 |  3.92    2.23
              1.000    4.47 | 2.000    6.88 | 3.000    3.18 |  4.00    2.23

     Max.Eff.Inten.(mm/hr)=      41.67         4.80
               over (min)        10.00        35.00
     Storage Coeff.  (min)=       8.93 (ii)   32.72 (ii)
     Unit Hyd. Tpeak (min)=      10.00        35.00
     Unit Hyd. peak  (cms)=       0.12         0.03
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.32         0.06          1.331 (iii)
     TIME TO PEAK    (hrs)=       1.58         2.17           1.58
     RUNOFF VOLUME    (mm)=      23.02         3.62          14.29
     TOTAL RAINFALL   (mm)=      25.02        25.02          25.02
     RUNOFF COEFFICIENT   =       0.92         0.14           0.57

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
        (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     5.77   0.227     1.50    10.16
     + ID2= 2 (  0202):    30.25   1.331     1.58    14.29
       ====================================================
       ID = 3 (  0002):    36.02   1.471     1.50    13.63

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
| Ptotal= 25.02 mm |    Comments: 25mm CHICAGO Storm
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.17    2.17 |  1.17    6.20 |  2.17    5.62 |  3.17    2.95
               0.33    2.38 |  1.33   12.18 |  2.33    4.80 |  3.33    2.76
               0.50    2.66 |  1.50   41.67 |  2.50    4.21 |  3.50    2.62
               0.67    3.03 |  1.67   15.28 |  2.67    3.78 |  3.67    2.47
               0.83    3.58 |  1.83    9.22 |  2.83    3.45 |  3.83    2.35
               1.00    4.47 |  2.00    6.88 |  3.00    3.18 |  4.00    2.23
```

```
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   1.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.87         0.87
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    107.39        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                        ---- TRANSFORMED HYETOGRAPH ----
    TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
     hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
   0.083    2.17 | 1.083    6.20 | 2.083    5.62 |  3.08    2.95
   0.167    2.17 | 1.167    6.20 | 2.167    5.62 |  3.17    2.95
   0.250    2.38 | 1.250   12.18 | 2.250    4.80 |  3.25    2.76
   0.333    2.38 | 1.333   12.18 | 2.333    4.80 |  3.33    2.76
   0.417    2.66 | 1.417   41.67 | 2.417    4.21 |  3.42    2.62
   0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
   0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
   0.667    3.03 | 1.667   15.28 | 2.667    3.78 |  3.67    2.47
   0.750    3.58 | 1.750    9.22 | 2.750    3.45 |  3.75    2.35
   0.833    3.58 | 1.833    9.22 | 2.833    3.45 |  3.83    2.35
   0.917    4.47 | 1.917    6.88 | 2.917    3.18 |  3.92    2.23
   1.000    4.47 | 2.000    6.88 | 3.000    3.18 |  4.00    2.23

     Max.Eff.Inten.(mm/hr)=      41.67         1.50
                  over (min)        5.00        45.00
     Storage Coeff.  (min)=       3.78 (ii)   41.69 (ii)
     Unit Hyd. Tpeak (min)=       5.00        45.00
     Unit Hyd. peak  (cms)=       0.25         0.03
                                                *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.00          0.095 (iii)
     TIME TO PEAK    (hrs)=       1.50         2.50           1.50
     RUNOFF VOLUME    (mm)=      23.02         2.20          12.60
     TOTAL RAINFALL   (mm)=      25.02        25.02          25.02
     RUNOFF COEFFICIENT   =       0.92         0.09           0.50

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0002):    36.02   1.471     1.50    13.63
     + ID2= 2 (  0203):     1.73   0.095     1.50    12.60
       ========================================================
       ID = 3 (  0003):    37.75   1.566     1.50    13.58

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0004)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000    |  0.6590      1.1752
                         0.0390     0.3192    |  0.9040      1.3822
                         0.0470     0.4662    |  1.0480      1.6005
                         0.0510     0.5443    |  1.1130      1.7139
                         0.0860     0.6254    |  3.0220      1.8301
                         0.2250     0.7966    | 10.8910      2.0711
                         0.4210     0.9799    | 22.0560      2.3233

                              AREA     QPEAK     TPEAK       R.V.
                              (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)   37.750     1.566      1.50      13.58
   OUTFLOW: ID= 1 (  0004)   37.750     0.047      4.33      13.53

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  2.99
                  TIME SHIFT OF PEAK FLOW          (min)=170.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.4629

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
| Ptotal= 25.02 mm |    Comments: 25mm CHICAGO Storm
--------------------
    TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
     hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
    0.17    2.17 |  1.17    6.20 |  2.17    5.62 |  3.17    2.95
    0.33    2.38 |  1.33   12.18 |  2.33    4.80 |  3.33    2.76
    0.50    2.66 |  1.50   41.67 |  2.50    4.21 |  3.50    2.62
    0.67    3.03 |  1.67   15.28 |  2.67    3.78 |  3.67    2.47
    0.83    3.58 |  1.83    9.22 |  2.83    3.45 |  3.83    2.35
    1.00    4.47 |  2.00    6.88 |  3.00    3.18 |  4.00    2.23

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=  12.81   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.16

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
    TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
     hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
   0.083    2.17 | 1.083    6.20 | 2.083    5.62 |  3.08    2.95
   0.167    2.17 | 1.167    6.20 | 2.167    5.62 |  3.17    2.95
   0.250    2.38 | 1.250   12.18 | 2.250    4.80 |  3.25    2.76
   0.333    2.38 | 1.333   12.18 | 2.333    4.80 |  3.33    2.76
   0.417    2.66 | 1.417   41.67 | 2.417    4.21 |  3.42    2.62
   0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
   0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
   0.667    3.03 | 1.667   15.28 | 2.667    3.78 |  3.67    2.47
   0.750    3.58 | 1.750    9.22 | 2.750    3.45 |  3.75    2.35
   0.833    3.58 | 1.833    9.22 | 2.833    3.45 |  3.83    2.35
   0.917    4.47 | 1.917    6.88 | 2.917    3.18 |  3.92    2.23
   1.000    4.47 | 2.000    6.88 | 3.000    3.18 |  4.00    2.23

     Unit Hyd Qpeak  (cms)=   0.422

     PEAK FLOW       (cms)=   0.023 (i)
     TIME TO PEAK    (hrs)=   3.583
     RUNOFF VOLUME    (mm)=   2.095
     TOTAL RAINFALL   (mm)=  25.023
     RUNOFF COEFFICIENT   =   0.084

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
| Ptotal= 25.02 mm |    Comments: 25mm CHICAGO Storm
--------------------
    TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
     hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
    0.17    2.17 |  1.17    6.20 |  2.17    5.62 |  3.17    2.95
    0.33    2.38 |  1.33   12.18 |  2.33    4.80 |  3.33    2.76
```

```
               0.50    2.66 |  1.50   41.67 |  2.50    4.21 |  3.50    2.62
               0.67    3.03 |  1.67   15.28 |  2.67    3.78 |  3.67    2.47
               0.83    3.58 |  1.83    9.22 |  2.83    3.45 |  3.83    2.35
               1.00    4.47 |  2.00    6.88 |  3.00    3.18 |  4.00    2.23
```

```
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.55         0.37
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     78.32        40.00
     Mannings n            =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.17 | 1.083    6.20 | 2.083    5.62 |  3.08    2.95
               0.167    2.17 | 1.167    6.20 | 2.167    5.62 |  3.17    2.95
               0.250    2.38 | 1.250   12.18 | 2.250    4.80 |  3.25    2.76
               0.333    2.38 | 1.333   12.18 | 2.333    4.80 |  3.33    2.76
               0.417    2.66 | 1.417   41.67 | 2.417    4.21 |  3.42    2.62
               0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
               0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
               0.667    3.03 | 1.667   15.28 | 2.667    3.78 |  3.67    2.47
               0.750    3.58 | 1.750    9.22 | 2.750    3.45 |  3.75    2.35
               0.833    3.58 | 1.833    9.22 | 2.833    3.45 |  3.83    2.35
               0.917    4.47 | 1.917    6.88 | 2.917    3.18 |  3.92    2.23
               1.000    4.47 | 2.000    6.88 | 3.000    3.18 |  4.00    2.23

     Max.Eff.Inten.(mm/hr)=      41.67         3.67
               over (min)        5.00        30.00
     Storage Coeff.  (min)=      3.13 (ii)   29.60 (ii)
     Unit Hyd. Tpeak (min)=      5.00        30.00
     Unit Hyd. peak  (cms)=      0.27         0.04
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.05         0.00          0.047 (iii)
     TIME TO PEAK    (hrs)=      1.50         2.08           1.50
     RUNOFF VOLUME    (mm)=     23.02         3.28          12.14
     TOTAL RAINFALL   (mm)=     25.02        25.02          25.02
     RUNOFF COEFFICIENT   =      0.92         0.13           0.49

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\c8e47b32
| Ptotal= 25.02 mm |    Comments: 25mm CHICAGO Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.17     2.17 |  1.17    6.20 |  2.17    5.62 |  3.17    2.95
               0.33     2.38 |  1.33   12.18 |  2.33    4.80 |  3.33    2.76
```

```
               0.50    2.66 |  1.50   41.67 |  2.50    4.21 |  3.50    2.62
               0.67    3.03 |  1.67   15.28 |  2.67    3.78 |  3.67    2.47
               0.83    3.58 |  1.83    9.22 |  2.83    3.45 |  3.83    2.35
               1.00    4.47 |  2.00    6.88 |  3.00    3.18 |  4.00    2.23
```

```
--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.58         0.39
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     80.42        40.00
     Mannings n            =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.17 | 1.083    6.20 | 2.083    5.62 |  3.08    2.95
               0.167    2.17 | 1.167    6.20 | 2.167    5.62 |  3.17    2.95
               0.250    2.38 | 1.250   12.18 | 2.250    4.80 |  3.25    2.76
               0.333    2.38 | 1.333   12.18 | 2.333    4.80 |  3.33    2.76
               0.417    2.66 | 1.417   41.67 | 2.417    4.21 |  3.42    2.62
               0.500    2.66 | 1.500   41.67 | 2.500    4.21 |  3.50    2.62
               0.583    3.03 | 1.583   15.28 | 2.583    3.78 |  3.58    2.47
               0.667    3.03 | 1.667   15.28 | 2.667    3.78 |  3.67    2.47
               0.750    3.58 | 1.750    9.22 | 2.750    3.45 |  3.75    2.35
               0.833    3.58 | 1.833    9.22 | 2.833    3.45 |  3.83    2.35
               0.917    4.47 | 1.917    6.88 | 2.917    3.18 |  3.92    2.23
               1.000    4.47 | 2.000    6.88 | 3.000    3.18 |  4.00    2.23

     Max.Eff.Inten.(mm/hr)=      41.67         3.67
               over (min)        5.00        30.00
     Storage Coeff.  (min)=      3.18 (ii)   29.65 (ii)
     Unit Hyd. Tpeak (min)=      5.00        30.00
     Unit Hyd. peak  (cms)=      0.27         0.04
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.05         0.00          0.049 (iii)
     TIME TO PEAK    (hrs)=      1.50         2.08           1.50
     RUNOFF VOLUME    (mm)=     23.02         3.28          12.15
     TOTAL RAINFALL   (mm)=     25.02        25.02          25.02
     RUNOFF COEFFICIENT   =      0.92         0.13           0.49

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.92   0.047     1.50    12.14
     + ID2= 2 (  0205):     0.97   0.049     1.50    12.15
       ================================================
       ID = 3 (  0005):     1.89   0.096     1.50    12.15

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0005):     1.89   0.096     1.50    12.15
     + ID2= 2 (  0207):    12.81   0.023     3.58     2.10
       ====================================================
       ID = 1 (  0005):    14.70   0.096     1.50     3.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):    14.70   0.096     1.50     3.39
     + ID2= 2 (  0004):    37.75   0.047     4.33    13.53
       ================================================
       ID = 3 (  0005):    52.45   0.109     1.50    10.68

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
================================================================================
==============

       V    V   I    SSSSS  U   U    A    L              (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\c70348ce-3867-46e5-94b9-2d5f87a2df2f\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\c70348ce-3867-46e5-94b9-2d5f87a2df2f\scena


DATE: 03-13-2019                          TIME: 02:36:07

USER:


COMMENTS: _____________________________________________________


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  ************************************************
  ** SIMULATION : SCS_06H_002Y                   **
  ************************************************

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   0.59   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.19

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
               0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
               0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
               0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
               0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
               0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
               0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
               0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
               1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
               1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
               1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
               1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
               1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
               1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
               1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
               1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

    Unit Hyd Qpeak  (cms)=   0.119

    PEAK FLOW       (cms)=   0.011 (i)
    TIME TO PEAK    (hrs)=   3.333
    RUNOFF VOLUME    (mm)=   5.777
    TOTAL RAINFALL   (mm)=  38.698
    RUNOFF COEFFICIENT   =   0.149

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	3.87	3.75	8.51	5.50	1.55
0.50	1.55	2.25	3.87	4.00	3.87	5.75	1.55
0.75	1.55	2.50	4.64	4.25	3.87	6.00	1.55
1.00	2.32	2.75	4.64	4.50	3.10	6.25	1.55
1.25	2.32	3.00	23.22	4.75	3.10		
1.50	2.32	3.25	60.37	5.00	2.32		
1.75	2.32	3.50	8.51	5.25	2.32		

CALIB	STANDHYD (0101)	ID= 1 DT= 5.0 min

Area (ha)= 2.11
Total Imp(%)= 25.00 Dir. Conn.(%)= 15.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.53	1.58
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	118.60	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	2.32	3.250	60.37	4.83	2.32
0.167	0.00	1.750	2.32	3.333	8.51	4.92	2.32
0.250	0.00	1.833	3.87	3.417	8.51	5.00	2.32
0.333	1.55	1.917	3.87	3.500	8.51	5.08	2.32
0.417	1.55	2.000	3.87	3.583	8.51	5.17	2.32
0.500	1.55	2.083	3.87	3.667	8.51	5.25	2.32
0.583	1.55	2.167	3.87	3.750	8.51	5.33	1.55
0.667	1.55	2.250	3.87	3.833	3.87	5.42	1.55
0.750	1.55	2.333	4.64	3.917	3.87	5.50	1.55
0.833	2.32	2.417	4.64	4.000	3.87	5.58	1.55
0.917	2.32	2.500	4.64	4.083	3.87	5.67	1.55
1.000	2.32	2.583	4.64	4.167	3.87	5.75	1.55
1.083	2.32	2.667	4.64	4.250	3.87	5.83	1.55
1.167	2.32	2.750	4.64	4.333	3.10	5.92	1.55
1.250	2.32	2.833	23.22	4.417	3.10	6.00	1.55
1.333	2.32	2.917	23.22	4.500	3.10	6.08	1.55
1.417	2.32	3.000	23.22	4.583	3.10	6.17	1.55
1.500	2.32	3.083	60.37	4.667	3.10	6.25	1.55
1.583	2.32	3.167	60.37	4.750	3.10		

				TOTALS
Max.Eff.Inten.(mm/hr)=		60.37	10.51	
over (min)		5.00	25.00	
Storage Coeff. (min)=		3.46 (ii)	20.84 (ii)	
Unit Hyd. Tpeak (min)=		5.00	25.00	
Unit Hyd. peak (cms)=		0.26	0.05	
PEAK FLOW	(cms)=	0.05	0.03	0.066 (iii)
TIME TO PEAK	(hrs)=	3.25	3.58	3.25
RUNOFF VOLUME	(mm)=	36.70	6.62	11.13
TOTAL RAINFALL	(mm)=	38.70	38.70	38.70
RUNOFF COEFFICIENT	=	0.95	0.17	0.29

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
Ptotal= 38.70 mm	Comments: SCS_06H_002Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	3.87	3.75	8.51	5.50	1.55
0.50	1.55	2.25	3.87	4.00	3.87	5.75	1.55
0.75	1.55	2.50	4.64	4.25	3.87	6.00	1.55
1.00	2.32	2.75	4.64	4.50	3.10	6.25	1.55
1.25	2.32	3.00	23.22	4.75	3.10		
1.50	2.32	3.25	60.37	5.00	2.32		
1.75	2.32	3.50	8.51	5.25	2.32		

CALIB	STANDHYD (0102)	ID= 1 DT= 5.0 min

Area (ha)= 0.23
Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	39.16	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	2.32	3.250	60.37	4.83	2.32
0.167	0.00	1.750	2.32	3.333	8.51	4.92	2.32
0.250	0.00	1.833	3.87	3.417	8.51	5.00	2.32
0.333	1.55	1.917	3.87	3.500	8.51	5.08	2.32
0.417	1.55	2.000	3.87	3.583	8.51	5.17	2.32
0.500	1.55	2.083	3.87	3.667	8.51	5.25	2.32
0.583	1.55	2.167	3.87	3.750	8.51	5.33	1.55
0.667	1.55	2.250	3.87	3.833	3.87	5.42	1.55
0.750	1.55	2.333	4.64	3.917	3.87	5.50	1.55
0.833	2.32	2.417	4.64	4.000	3.87	5.58	1.55
0.917	2.32	2.500	4.64	4.083	3.87	5.67	1.55
1.000	2.32	2.583	4.64	4.167	3.87	5.75	1.55
1.083	2.32	2.667	4.64	4.250	3.87	5.83	1.55
1.167	2.32	2.750	4.64	4.333	3.10	5.92	1.55
1.250	2.32	2.833	23.22	4.417	3.10	6.00	1.55
1.333	2.32	2.917	23.22	4.500	3.10	6.08	1.55
1.417	2.32	3.000	23.22	4.583	3.10	6.17	1.55
1.500	2.32	3.083	60.37	4.667	3.10	6.25	1.55
1.583	2.32	3.167	60.37	4.750	3.10		

				TOTALS
Max.Eff.Inten.(mm/hr)=		60.37	10.91	
over (min)		5.00	20.00	
Storage Coeff. (min)=		1.78 (ii)	18.90 (ii)	
Unit Hyd. Tpeak (min)=		5.00	20.00	
Unit Hyd. peak (cms)=		0.32	0.06	
PEAK FLOW	(cms)=	0.01	0.00	0.011 (iii)
TIME TO PEAK	(hrs)=	3.25	3.50	3.25
RUNOFF VOLUME	(mm)=	36.70	6.74	14.18
TOTAL RAINFALL	(mm)=	38.70	38.70	38.70

```
     RUNOFF COEFFICIENT   =       0.95         0.17          0.37

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

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--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   2.84
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  60.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.13         0.71
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     137.60        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
               0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
               0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
               0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
               0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
               0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
               0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
               0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
               1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
               1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
               1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
               1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
               1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
               1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
               1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
               1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

     Max.Eff.Inten.(mm/hr)=     60.37        26.13
               over (min)        5.00        20.00
     Storage Coeff.  (min)=      3.79 (ii)   15.86 (ii)
     Unit Hyd. Tpeak (min)=      5.00        20.00
     Unit Hyd. peak  (cms)=      0.25         0.07
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.28         0.03         0.301 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.42          3.25
     RUNOFF VOLUME    (mm)=     36.70         9.23         25.71
     TOTAL RAINFALL   (mm)=     38.70        38.70         38.70
     RUNOFF COEFFICIENT   =      0.95         0.24          0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

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--------------------
| CALIB            |
| STANDHYD (  0208)|   Area    (ha)=   1.78
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  40.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.16         0.62
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     108.93        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
               0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
               0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
               0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
               0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
               0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
               0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
               0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
               1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
               1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
               1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
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```
               1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
               1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
               1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
               1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
               1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

     Max.Eff.Inten.(mm/hr)=      60.37        29.80
               over (min)        5.00        15.00
     Storage Coeff.  (min)=      3.29 (ii)   14.75 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.27         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.12         0.03          0.144 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.42           3.25
     RUNOFF VOLUME    (mm)=     36.70         9.81          20.56
     TOTAL RAINFALL   (mm)=     38.70        38.70          38.70
     RUNOFF COEFFICIENT   =      0.95         0.25           0.53

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| DUHYD    (  0006)|
| Inlet Cap.= 0.211|
| #of Inlets=     1|
| Total(cms)=   0.2|      AREA     QPEAK     TPEAK    R.V.
-------------------       (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   1.78      0.14      3.25   20.56
     ================================================
     MAJOR SYS.(ID= 2):   0.00      0.00      0.00    0.00
     MINOR SYS.(ID= 3):   1.78      0.14      3.25   20.56

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.066     3.25    11.13
     + ID2= 2 (  0102):     0.23   0.011     3.25    14.18
       ================================================
       ID = 3 (  0001):     2.34   0.077     3.25    11.43

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.077     3.25    11.43
     + ID2= 2 (  0105):     0.59   0.011     3.33     5.78
       ================================================
       ID = 1 (  0001):     2.93   0.087     3.25    10.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     2.93   0.087     3.25    10.29
     + ID2= 2 (  0201):     2.84   0.301     3.25    25.71
       ================================================
       ID = 3 (  0001):     5.77   0.388     3.25    17.88

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   0006 <ID= 2> IS DRY.
*** W A R N I N G :  HYDROGRAPH   0001 = HYDROGRAPH 0003
       ID1= 3 (  0001):     5.77   0.388     3.25    17.88
     + ID2= 2 (  0006):     0.00   0.000     0.00     0.00
       ================================================
       ID = 1 (  0001):     5.77   0.388     3.25    17.88

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

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-------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=  30.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  55.00
-------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      21.18         9.08
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     449.07        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
                0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
                0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
                0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
                0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
                0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
                0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
                0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
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              0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
              0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
              0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
              1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
              1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
              1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
              1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
              1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
              1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
              1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
              1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

    Max.Eff.Inten.(mm/hr)=      60.37        23.06
                over (min)      10.00        25.00
    Storage Coeff.  (min)=       7.70 (ii)   20.39 (ii)
    Unit Hyd. Tpeak (min)=      10.00        25.00
    Unit Hyd. peak  (cms)=       0.13         0.05
                                                      *TOTALS*
    PEAK FLOW       (cms)=       2.38         0.27          2.526 (iii)
    TIME TO PEAK    (hrs)=       3.25         3.50           3.25
    RUNOFF VOLUME    (mm)=      36.70         8.71          24.10
    TOTAL RAINFALL   (mm)=      38.70        38.70          38.70
    RUNOFF COEFFICIENT   =       0.95         0.23           0.62


      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  61.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     5.77   0.388     3.25    17.88
     + ID2= 2 (  0202):    30.25   2.526     3.25    24.10
       ================================================
       ID = 3 (  0002):    36.02   2.914     3.25    23.10

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
-------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
               0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
               0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
               1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
               1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
               1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
               1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

--------------------------------------------------------------------------------

-------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   1.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)

    Surface Area     (ha)=       0.87         0.87
    Dep. Storage     (mm)=       2.00         5.00
    Average Slope     (%)=       1.00         2.00
    Length            (m)=     107.39        40.00
    Mannings n           =      0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
               0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
               0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
               0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
               0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
               0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
               0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
               0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
               1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
               1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
               1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
               1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
               1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
               1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
               1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
               1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

    Max.Eff.Inten.(mm/hr)=      60.37         8.07
                over (min)       5.00        25.00
    Storage Coeff.  (min)=       3.26 (ii)   22.58 (ii)
    Unit Hyd. Tpeak (min)=       5.00        25.00
    Unit Hyd. peak  (cms)=       0.27         0.05
                                                      *TOTALS*
    PEAK FLOW       (cms)=       0.14         0.01          0.149 (iii)
    TIME TO PEAK    (hrs)=       3.25         3.58           3.25
    RUNOFF VOLUME    (mm)=      36.70         5.79          21.24
    TOTAL RAINFALL   (mm)=      38.70        38.70          38.70
    RUNOFF COEFFICIENT   =       0.95         0.15           0.55

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  61.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0002):    36.02   2.914     3.25    23.10
     + ID2= 2 (  0203):     1.73   0.149     3.25    21.24
       ================================================
       ID = 3 (  0003):    37.75   3.063     3.25    23.02

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| RESERVOIR(  0004)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
```

```
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                        0.0000     0.0000   |   0.6590      1.1752
                        0.0390     0.3192   |   0.9040      1.3822
                        0.0470     0.4662   |   1.0480      1.6005
                        0.0510     0.5443   |   1.1130      1.7139
                        0.0860     0.6254   |   3.0220      1.8301
                        0.2250     0.7966   |  10.8910      2.0711
                        0.4210     0.9799   |  22.0560      2.3233

                              AREA     QPEAK     TPEAK       R.V.
                              (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)     37.750      3.063      3.25      23.02
   OUTFLOW: ID= 1 (  0004)     37.750      0.162      5.33      22.96

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.29
                  TIME SHIFT OF PEAK FLOW         (min)=125.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.7191

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

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--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=  12.81   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.16

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                           ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
               0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
               0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
               0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
               0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
               0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
               0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
               0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
               1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
               1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
               1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
               1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
               1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
               1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
               1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
               1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

     Unit Hyd Qpeak  (cms)=   0.422

     PEAK FLOW       (cms)=   0.067 (i)
     TIME TO PEAK    (hrs)=   4.583
     RUNOFF VOLUME    (mm)=   5.634
     TOTAL RAINFALL   (mm)=  38.698
     RUNOFF COEFFICIENT   =   0.146

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

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--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------

                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55          0.37
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      78.32         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                           ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
               0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
               0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
               0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
               0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
               0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
               0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
               0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
               1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
               1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
               1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
               1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
               1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
               1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
               1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
               1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

     Max.Eff.Inten.(mm/hr)=      60.37        19.44
               over (min)         5.00        20.00
```

```
     Storage Coeff.  (min)=       2.70 (ii)   16.29 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.29         0.06
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.01          0.076 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.42           3.25
     RUNOFF VOLUME    (mm)=      36.70         8.03          20.92
     TOTAL RAINFALL   (mm)=      38.70        38.70          38.70
     RUNOFF COEFFICIENT   =       0.95         0.21           0.54

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\04261804
| Ptotal= 38.70 mm |    Comments: SCS_06H_002Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    3.87 |  3.75    8.51 |  5.50    1.55
                0.50    1.55 |  2.25    3.87 |  4.00    3.87 |  5.75    1.55
                0.75    1.55 |  2.50    4.64 |  4.25    3.87 |  6.00    1.55
                1.00    2.32 |  2.75    4.64 |  4.50    3.10 |  6.25    1.55
                1.25    2.32 |  3.00   23.22 |  4.75    3.10 |
                1.50    2.32 |  3.25   60.37 |  5.00    2.32 |
                1.75    2.32 |  3.50    8.51 |  5.25    2.32 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.58         0.39
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      80.42        40.00
     Mannings n            =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    2.32 | 3.250   60.37 |  4.83    2.32
               0.167    0.00 | 1.750    2.32 | 3.333    8.51 |  4.92    2.32
               0.250    0.00 | 1.833    3.87 | 3.417    8.51 |  5.00    2.32
               0.333    1.55 | 1.917    3.87 | 3.500    8.51 |  5.08    2.32
               0.417    1.55 | 2.000    3.87 | 3.583    8.51 |  5.17    2.32
               0.500    1.55 | 2.083    3.87 | 3.667    8.51 |  5.25    2.32
               0.583    1.55 | 2.167    3.87 | 3.750    8.51 |  5.33    1.55
               0.667    1.55 | 2.250    3.87 | 3.833    3.87 |  5.42    1.55
               0.750    1.55 | 2.333    4.64 | 3.917    3.87 |  5.50    1.55
               0.833    2.32 | 2.417    4.64 | 4.000    3.87 |  5.58    1.55
               0.917    2.32 | 2.500    4.64 | 4.083    3.87 |  5.67    1.55
               1.000    2.32 | 2.583    4.64 | 4.167    3.87 |  5.75    1.55
               1.083    2.32 | 2.667    4.64 | 4.250    3.87 |  5.83    1.55
               1.167    2.32 | 2.750    4.64 | 4.333    3.10 |  5.92    1.55
               1.250    2.32 | 2.833   23.22 | 4.417    3.10 |  6.00    1.55
               1.333    2.32 | 2.917   23.22 | 4.500    3.10 |  6.08    1.55
               1.417    2.32 | 3.000   23.22 | 4.583    3.10 |  6.17    1.55
               1.500    2.32 | 3.083   60.37 | 4.667    3.10 |  6.25    1.55
               1.583    2.32 | 3.167   60.37 | 4.750    3.10 |

     Max.Eff.Inten.(mm/hr)=      60.37        19.44
               over (min)        5.00        20.00
     Storage Coeff.  (min)=       2.74 (ii)   16.33 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.28         0.06
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.01          0.080 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.42           3.25
     RUNOFF VOLUME    (mm)=      36.70         8.03          20.92
     TOTAL RAINFALL   (mm)=      38.70        38.70          38.70
     RUNOFF COEFFICIENT   =       0.95         0.21           0.54

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.92   0.076     3.25    20.92
     + ID2= 2 (  0205):     0.97   0.080     3.25    20.92
       ================================================
       ID = 3 (  0005):     1.89   0.156     3.25    20.92

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0005):     1.89   0.156     3.25    20.92
     + ID2= 2 (  0207):    12.81   0.067     4.58     5.63
       ================================================
       ID = 1 (  0005):    14.70   0.163     3.25     7.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):    14.70   0.163     3.25     7.60
     + ID2= 2 (  0004):    37.75   0.162     5.33    22.96
       ================================================
       ID = 3 (  0005):    52.45   0.232     4.75    18.66

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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================================================================================
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       V    V   I    SSSSS  U   U    A    L             (v 5.1.2000)
```

```
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\8df85823-7570-47eb-98f5-a5fd5d244c3b\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\8df85823-7570-47eb-98f5-a5fd5d244c3b\scena


DATE: 03-13-2019                          TIME: 02:36:06

USER:


COMMENTS: _____________________________________________________

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  ************************************************
  ** SIMULATION : SCS_06H_005Y                   **
  ************************************************


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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
                0.50    2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
                0.75    2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
                1.00    3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
                1.25    3.14 |  3.00   31.44 |  4.75    4.19 |
                1.50    3.14 |  3.25   81.74 |  5.00    3.14 |
                1.75    3.14 |  3.50   11.53 |  5.25    3.14 |

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| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   0.59   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.19

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                           ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083   0.00 | 1.667   3.14 | 3.250   81.74 |  4.83   3.14
                0.167   0.00 | 1.750   3.14 | 3.333   11.53 |  4.92   3.14
                0.250   0.00 | 1.833   5.24 | 3.417   11.53 |  5.00   3.14
                0.333   2.10 | 1.917   5.24 | 3.500   11.53 |  5.08   3.14
                0.417   2.10 | 2.000   5.24 | 3.583   11.53 |  5.17   3.14
                0.500   2.10 | 2.083   5.24 | 3.667   11.53 |  5.25   3.14
                0.583   2.10 | 2.167   5.24 | 3.750   11.53 |  5.33   2.10
                0.667   2.10 | 2.250   5.24 | 3.833    5.24 |  5.42   2.10
                0.750   2.10 | 2.333   6.29 | 3.917    5.24 |  5.50   2.10
                0.833   3.14 | 2.417   6.29 | 4.000    5.24 |  5.58   2.10
                0.917   3.14 | 2.500   6.29 | 4.083    5.24 |  5.67   2.10
                1.000   3.14 | 2.583   6.29 | 4.167    5.24 |  5.75   2.10
                1.083   3.14 | 2.667   6.29 | 4.250    5.24 |  5.83   2.10
                1.167   3.14 | 2.750   6.29 | 4.333    4.19 |  5.92   2.10
                1.250   3.14 | 2.833  31.44 | 4.417    4.19 |  6.00   2.10
                1.333   3.14 | 2.917  31.44 | 4.500    4.19 |  6.08   2.10
                1.417   3.14 | 3.000  31.44 | 4.583    4.19 |  6.17   2.10
                1.500   3.14 | 3.083  81.74 | 4.667    4.19 |  6.25   2.10
                1.583   3.14 | 3.167  81.74 | 4.750    4.19 |

     Unit Hyd Qpeak  (cms)=   0.119

     PEAK FLOW       (cms)=   0.022 (i)
     TIME TO PEAK    (hrs)=   3.333
     RUNOFF VOLUME    (mm)=  10.684
     TOTAL RAINFALL   (mm)=  52.400
     RUNOFF COEFFICIENT   =   0.204

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
                0.50    2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
                0.75    2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
                1.00    3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
                1.25    3.14 |  3.00   31.44 |  4.75    4.19 |
                1.50    3.14 |  3.25   81.74 |  5.00    3.14 |
                1.75    3.14 |  3.50   11.53 |  5.25    3.14 |

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| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53          1.58
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     118.60         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                           ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083   0.00 | 1.667   3.14 | 3.250   81.74 |  4.83   3.14
                0.167   0.00 | 1.750   3.14 | 3.333   11.53 |  4.92   3.14
```

0.250	0.00	1.833	5.24	3.417	11.53	5.00	3.14
0.333	2.10	1.917	5.24	3.500	11.53	5.08	3.14
0.417	2.10	2.000	5.24	3.583	11.53	5.17	3.14
0.500	2.10	2.083	5.24	3.667	11.53	5.25	3.14
0.583	2.10	2.167	5.24	3.750	11.53	5.33	2.10
0.667	2.10	2.250	5.24	3.833	5.24	5.42	2.10
0.750	2.10	2.333	6.29	3.917	5.24	5.50	2.10
0.833	3.14	2.417	6.29	4.000	5.24	5.58	2.10
0.917	3.14	2.500	6.29	4.083	5.24	5.67	2.10
1.000	3.14	2.583	6.29	4.167	5.24	5.75	2.10
1.083	3.14	2.667	6.29	4.250	5.24	5.83	2.10
1.167	3.14	2.750	6.29	4.333	4.19	5.92	2.10
1.250	3.14	2.833	31.44	4.417	4.19	6.00	2.10
1.333	3.14	2.917	31.44	4.500	4.19	6.08	2.10
1.417	3.14	3.000	31.44	4.583	4.19	6.17	2.10
1.500	3.14	3.083	81.74	4.667	4.19	6.25	2.10
1.583	3.14	3.167	81.74	4.750	4.19		

Max.Eff.Inten.(mm/hr)=	81.74	24.11	
over (min)	5.00	20.00	
Storage Coeff. (min)=	3.07 (ii)	15.54 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.27	0.07	
			TOTALS
PEAK FLOW (cms)=	0.07	0.06	0.109 (iii)
TIME TO PEAK (hrs)=	3.25	3.42	3.25
RUNOFF VOLUME (mm)=	50.40	12.04	17.79
TOTAL RAINFALL (mm)=	52.40	52.40	52.40
RUNOFF COEFFICIENT =	0.96	0.23	0.34

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
Ptotal= 52.40 mm | Comments: SCS_06H_005Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	5.24	3.75	11.53	5.50	2.10
0.50	2.10	2.25	5.24	4.00	5.24	5.75	2.10
0.75	2.10	2.50	6.29	4.25	5.24	6.00	2.10
1.00	3.14	2.75	6.29	4.50	4.19	6.25	2.10
1.25	3.14	3.00	31.44	4.75	4.19		
1.50	3.14	3.25	81.74	5.00	3.14		
1.75	3.14	3.50	11.53	5.25	3.14		

CALIB
STANDHYD (0102) | Area (ha)= 0.23
ID= 1 DT= 5.0 min | Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	39.16	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.14	3.250	81.74	4.83	3.14
0.167	0.00	1.750	3.14	3.333	11.53	4.92	3.14
0.250	0.00	1.833	5.24	3.417	11.53	5.00	3.14
0.333	2.10	1.917	5.24	3.500	11.53	5.08	3.14
0.417	2.10	2.000	5.24	3.583	11.53	5.17	3.14
0.500	2.10	2.083	5.24	3.667	11.53	5.25	3.14
0.583	2.10	2.167	5.24	3.750	11.53	5.33	2.10
0.667	2.10	2.250	5.24	3.833	5.24	5.42	2.10
0.750	2.10	2.333	6.29	3.917	5.24	5.50	2.10
0.833	3.14	2.417	6.29	4.000	5.24	5.58	2.10
0.917	3.14	2.500	6.29	4.083	5.24	5.67	2.10
1.000	3.14	2.583	6.29	4.167	5.24	5.75	2.10
1.083	3.14	2.667	6.29	4.250	5.24	5.83	2.10
1.167	3.14	2.750	6.29	4.333	4.19	5.92	2.10
1.250	3.14	2.833	31.44	4.417	4.19	6.00	2.10
1.333	3.14	2.917	31.44	4.500	4.19	6.08	2.10
1.417	3.14	3.000	31.44	4.583	4.19	6.17	2.10
1.500	3.14	3.083	81.74	4.667	4.19	6.25	2.10
1.583	3.14	3.167	81.74	4.750	4.19		

Max.Eff.Inten.(mm/hr)=	81.74	24.96	
over (min)	5.00	15.00	
Storage Coeff. (min)=	1.58 (ii)	13.87 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.33	0.08	
			TOTALS
PEAK FLOW (cms)=	0.01	0.01	0.018 (iii)
TIME TO PEAK (hrs)=	3.25	3.42	3.25
RUNOFF VOLUME (mm)=	50.40	12.24	21.74
TOTAL RAINFALL (mm)=	52.40	52.40	52.40
RUNOFF COEFFICIENT =	0.96	0.23	0.41

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
Ptotal= 52.40 mm | Comments: SCS_06H_005Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	5.24	3.75	11.53	5.50	2.10
0.50	2.10	2.25	5.24	4.00	5.24	5.75	2.10
0.75	2.10	2.50	6.29	4.25	5.24	6.00	2.10
1.00	3.14	2.75	6.29	4.50	4.19	6.25	2.10
1.25	3.14	3.00	31.44	4.75	4.19		
1.50	3.14	3.25	81.74	5.00	3.14		
1.75	3.14	3.50	11.53	5.25	3.14		

CALIB

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| STANDHYD (  0201)|   Area    (ha)=   2.84
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  60.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.13         0.71
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     137.60        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
               0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
               0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
               0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
               0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
               0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
               0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
               0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
               0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
               0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
               0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
               1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
               1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
               1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
               1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
               1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
               1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
               1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
               1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

     Max.Eff.Inten.(mm/hr)=      81.74        50.61
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.35 (ii)   12.62 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.26         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.38         0.06          0.433 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      50.40        16.10          36.68
     TOTAL RAINFALL   (mm)=      52.40        52.40          52.40
     RUNOFF COEFFICIENT   =       0.96         0.31           0.70

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25     0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
               0.50     2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
               0.75     2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
               1.00     3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
               1.25     3.14 |  3.00   31.44 |  4.75    4.19 |
               1.50     3.14 |  3.25   81.74 |  5.00    3.14 |
               1.75     3.14 |  3.50   11.53 |  5.25    3.14 |

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| CALIB            |
| STANDHYD (  0208)|   Area    (ha)=   1.78
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  40.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.16         0.62
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     108.93        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
               0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
               0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
               0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
               0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
               0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
               0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
               0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
               0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
               0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
               0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
               1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
               1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
               1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
               1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
               1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
               1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
               1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
               1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

     Max.Eff.Inten.(mm/hr)=      81.74        57.10
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.92 (ii)   11.75 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.28         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.16         0.06          0.211 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      50.40        16.98          30.34
     TOTAL RAINFALL   (mm)=      52.40        52.40          52.40
     RUNOFF COEFFICIENT   =       0.96         0.32           0.58

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| DUHYD    (  0006)|
| Inlet Cap.= 0.211|
| #of Inlets=     1|
| Total(cms)=   0.2|      AREA     QPEAK     TPEAK    R.V.
```

```
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   1.78      0.21      3.25   30.34
     ================================================
     MAJOR SYS.(ID= 2):   0.00      0.00      3.25   30.34
     MINOR SYS.(ID= 3):   1.78      0.21      3.25   30.34

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0101):     2.11   0.109     3.25    17.79
      + ID2= 2 (  0102):     0.23   0.018     3.25    21.74
        ================================================
        ID = 3 (  0001):     2.34   0.127     3.25    18.18

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):     2.34   0.127     3.25    18.18
      + ID2= 2 (  0105):     0.59   0.022     3.33    10.68
        ================================================
        ID = 1 (  0001):     2.93   0.147     3.25    16.67

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     2.93   0.147     3.25    16.67
      + ID2= 2 (  0201):     2.84   0.433     3.25    36.68
        ================================================
        ID = 3 (  0001):     5.77   0.580     3.25    26.52

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):     5.77   0.580     3.25    26.52
      + ID2= 2 (  0006):     0.00   0.000     3.25    30.34
        ================================================
        ID = 1 (  0001):     5.77   0.580     3.25    26.52

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
                0.50    2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
                0.75    2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
                1.00    3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
                1.25    3.14 |  3.00   31.44 |  4.75    4.19 |
                1.50    3.14 |  3.25   81.74 |  5.00    3.14 |
                1.75    3.14 |  3.50   11.53 |  5.25    3.14 |
```

```
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=  30.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  55.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      21.18         9.08
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     449.07        40.00
     Mannings n           =      0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
               0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
               0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
               0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
               0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
               0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
               0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
               0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
               0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
               0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
               0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
               1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
               1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
               1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
               1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
               1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
               1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
               1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
               1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

     Max.Eff.Inten.(mm/hr)=      81.74        45.14
               over (min)         5.00        20.00
     Storage Coeff.  (min)=       6.82 (ii)   16.52 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.18         0.06
                                                        *TOTALS*
     PEAK FLOW       (cms)=       3.51         0.56        3.871 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.42         3.25
     RUNOFF VOLUME    (mm)=      50.40        15.30        34.61
     TOTAL RAINFALL   (mm)=      52.40        52.40        52.40
     RUNOFF COEFFICIENT   =       0.96         0.29         0.66

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
```

```
| ADD HYD  (  0002)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     5.77   0.580     3.25    26.52
     + ID2= 2 (  0202):    30.25   3.871     3.25    34.61
       ================================================
       ID = 3 (  0002):    36.02   4.451     3.25    33.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
                0.50    2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
                0.75    2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
                1.00    3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
                1.25    3.14 |  3.00   31.44 |  4.75    4.19 |
                1.50    3.14 |  3.25   81.74 |  5.00    3.14 |
                1.75    3.14 |  3.50   11.53 |  5.25    3.14 |
```

```
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   1.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.87         0.87
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    107.39        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
               0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
               0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
               0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
               0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
               0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
               0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
               0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
               0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
               0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
               0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
               1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
               1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
               1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
               1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
               1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
               1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
               1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
               1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

     Max.Eff.Inten.(mm/hr)=     81.74        18.85
               over (min)        5.00        20.00
     Storage Coeff.  (min)=      2.89 (ii)   16.65 (ii)
     Unit Hyd. Tpeak (min)=      5.00        20.00
     Unit Hyd. peak  (cms)=      0.28         0.06
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.20         0.02        0.211 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.42         3.25
     RUNOFF VOLUME    (mm)=     50.40        10.71        30.55
     TOTAL RAINFALL   (mm)=     52.40        52.40        52.40
     RUNOFF COEFFICIENT   =      0.96         0.20         0.58

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  61.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0002):    36.02   4.451     3.25    33.31
     + ID2= 2 (  0203):     1.73   0.211     3.25    30.55
       ================================================
       ID = 3 (  0003):    37.75   4.662     3.25    33.18

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| RESERVOIR(  0004)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                        0.0000     0.0000    |   0.6590      1.1752
                        0.0390     0.3192    |   0.9040      1.3822
                        0.0470     0.4662    |   1.0480      1.6005
                        0.0510     0.5443    |   1.1130      1.7139
                        0.0860     0.6254    |   3.0220      1.8301
                        0.2250     0.7966    |  10.8910      2.0711
                        0.4210     0.9799    |  22.0560      2.3233

                             AREA     QPEAK     TPEAK       R.V.
                             (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)    37.750     4.662      3.25      33.18
   OUTFLOW: ID= 1 (  0004)    37.750     0.381      4.50      33.13

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  8.18
                  TIME SHIFT OF PEAK FLOW         (min)= 75.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.9430
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
                0.50    2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
                0.75    2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
                1.00    3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
                1.25    3.14 |  3.00   31.44 |  4.75    4.19 |
                1.50    3.14 |  3.25   81.74 |  5.00    3.14 |
```

```
                1.75    3.14 |  3.50   11.53 |  5.25    3.14 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=  12.81   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.16

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                            ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
               0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
               0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
               0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
               0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
               0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
               0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
               0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
               0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
               0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
               0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
               1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
               1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
               1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
               1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
               1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
               1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
               1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
               1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

    Unit Hyd Qpeak  (cms)=   0.422

    PEAK FLOW       (cms)=   0.127 (i)
    TIME TO PEAK    (hrs)=   4.583
    RUNOFF VOLUME    (mm)=  10.510
    TOTAL RAINFALL   (mm)=  52.400
    RUNOFF COEFFICIENT   =   0.201

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25     0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
               0.50     2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
               0.75     2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
               1.00     3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
               1.25     3.14 |  3.00   31.44 |  4.75    4.19 |
               1.50     3.14 |  3.25   81.74 |  5.00    3.14 |
               1.75     3.14 |  3.50   11.53 |  5.25    3.14 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00

--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55          0.37
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      78.32         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                            ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
               0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
               0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
               0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
               0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
               0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
               0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
               0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
               0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
               0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
               0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
               1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
               1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
               1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
               1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
               1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
               1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
               1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
               1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

     Max.Eff.Inten.(mm/hr)=      81.74         34.79
                   over (min)        5.00         15.00
     Storage Coeff.  (min)=       2.39 (ii)    13.16 (ii)
     Unit Hyd. Tpeak (min)=       5.00         15.00
     Unit Hyd. peak  (cms)=       0.30          0.08
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.09          0.02          0.112 (iii)
     TIME TO PEAK    (hrs)=       3.25          3.33           3.25
     RUNOFF VOLUME    (mm)=      50.40         14.25          30.51
     TOTAL RAINFALL   (mm)=      52.40         52.40          52.40
     RUNOFF COEFFICIENT   =       0.96          0.27           0.58

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\99364209
| Ptotal= 52.40 mm |    Comments: SCS_06H_005Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25     0.00 |  2.00    5.24 |  3.75   11.53 |  5.50    2.10
               0.50     2.10 |  2.25    5.24 |  4.00    5.24 |  5.75    2.10
               0.75     2.10 |  2.50    6.29 |  4.25    5.24 |  6.00    2.10
               1.00     3.14 |  2.75    6.29 |  4.50    4.19 |  6.25    2.10
               1.25     3.14 |  3.00   31.44 |  4.75    4.19 |
               1.50     3.14 |  3.25   81.74 |  5.00    3.14 |
```

```
               1.75    3.14 |  3.50   11.53 |  5.25    3.14 |

--------------------------------------------------------------------------------

-------------------
| CALIB           |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
-------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.58         0.39
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      80.42        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.14 | 3.250   81.74 |  4.83    3.14
               0.167    0.00 | 1.750    3.14 | 3.333   11.53 |  4.92    3.14
               0.250    0.00 | 1.833    5.24 | 3.417   11.53 |  5.00    3.14
               0.333    2.10 | 1.917    5.24 | 3.500   11.53 |  5.08    3.14
               0.417    2.10 | 2.000    5.24 | 3.583   11.53 |  5.17    3.14
               0.500    2.10 | 2.083    5.24 | 3.667   11.53 |  5.25    3.14
               0.583    2.10 | 2.167    5.24 | 3.750   11.53 |  5.33    2.10
               0.667    2.10 | 2.250    5.24 | 3.833    5.24 |  5.42    2.10
               0.750    2.10 | 2.333    6.29 | 3.917    5.24 |  5.50    2.10
               0.833    3.14 | 2.417    6.29 | 4.000    5.24 |  5.58    2.10
               0.917    3.14 | 2.500    6.29 | 4.083    5.24 |  5.67    2.10
               1.000    3.14 | 2.583    6.29 | 4.167    5.24 |  5.75    2.10
               1.083    3.14 | 2.667    6.29 | 4.250    5.24 |  5.83    2.10
               1.167    3.14 | 2.750    6.29 | 4.333    4.19 |  5.92    2.10
               1.250    3.14 | 2.833   31.44 | 4.417    4.19 |  6.00    2.10
               1.333    3.14 | 2.917   31.44 | 4.500    4.19 |  6.08    2.10
               1.417    3.14 | 3.000   31.44 | 4.583    4.19 |  6.17    2.10
               1.500    3.14 | 3.083   81.74 | 4.667    4.19 |  6.25    2.10
               1.583    3.14 | 3.167   81.74 | 4.750    4.19 |

     Max.Eff.Inten.(mm/hr)=      81.74        34.79
               over (min)        5.00        15.00
     Storage Coeff.  (min)=      2.43 (ii)   13.20 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.30         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.10         0.02         0.118 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.33          3.25
     RUNOFF VOLUME    (mm)=     50.40        14.25         30.51
     TOTAL RAINFALL   (mm)=     52.40        52.40         52.40
     RUNOFF COEFFICIENT   =      0.96         0.27          0.58

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.92   0.112     3.25    30.51
     + ID2= 2 (  0205):     0.97   0.118     3.25    30.51
       ================================================
       ID = 3 (  0005):     1.89   0.231     3.25    30.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0005):     1.89   0.231     3.25    30.51
     + ID2= 2 (  0207):    12.81   0.127     4.58    10.51
       ================================================
       ID = 1 (  0005):    14.70   0.246     3.25    13.08

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):    14.70   0.246     3.25    13.08
     + ID2= 2 (  0004):    37.75   0.381     4.50    33.13
       ================================================
       ID = 3 (  0005):    52.45   0.525     4.50    27.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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      V    V   I    SSSSS  U   U    A    L             (v 5.1.2000)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\010d61ba-6a0e-4a58-a54b-1db501d31e76\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\010d61ba-6a0e-4a58-a54b-1db501d31e76\scena


DATE: 03-13-2019                          TIME: 02:36:06

USER:


COMMENTS: _____
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  ***********************************************
  ** SIMULATION : SCS_06H_010Y                  **
  ***********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
                0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
                0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
                1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
                1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
                1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
                1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

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--------------------
| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   0.59   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.19

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                           ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.69 | 3.250   95.94 |  4.83    3.69
               0.167    0.00 | 1.750    3.69 | 3.333   13.53 |  4.92    3.69
               0.250    0.00 | 1.833    6.15 | 3.417   13.53 |  5.00    3.69
               0.333    2.46 | 1.917    6.15 | 3.500   13.53 |  5.08    3.69
               0.417    2.46 | 2.000    6.15 | 3.583   13.53 |  5.17    3.69
               0.500    2.46 | 2.083    6.15 | 3.667   13.53 |  5.25    3.69
               0.583    2.46 | 2.167    6.15 | 3.750   13.53 |  5.33    2.46
               0.667    2.46 | 2.250    6.15 | 3.833    6.15 |  5.42    2.46
               0.750    2.46 | 2.333    7.38 | 3.917    6.15 |  5.50    2.46
               0.833    3.69 | 2.417    7.38 | 4.000    6.15 |  5.58    2.46
               0.917    3.69 | 2.500    7.38 | 4.083    6.15 |  5.67    2.46
               1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
               1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
               1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
               1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
               1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
               1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
               1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
               1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

    Unit Hyd Qpeak  (cms)=   0.119

    PEAK FLOW       (cms)=   0.029 (i)
    TIME TO PEAK    (hrs)=   3.333
    RUNOFF VOLUME    (mm)=  14.549
    TOTAL RAINFALL   (mm)=  61.500
    RUNOFF COEFFICIENT   =   0.237

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
                0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
                0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
                1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
                1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
                1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
                1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53         1.58
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     118.60        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                           ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.69 | 3.250   95.94 |  4.83    3.69
               0.167    0.00 | 1.750    3.69 | 3.333   13.53 |  4.92    3.69
               0.250    0.00 | 1.833    6.15 | 3.417   13.53 |  5.00    3.69
               0.333    2.46 | 1.917    6.15 | 3.500   13.53 |  5.08    3.69
               0.417    2.46 | 2.000    6.15 | 3.583   13.53 |  5.17    3.69
               0.500    2.46 | 2.083    6.15 | 3.667   13.53 |  5.25    3.69
               0.583    2.46 | 2.167    6.15 | 3.750   13.53 |  5.33    2.46
               0.667    2.46 | 2.250    6.15 | 3.833    6.15 |  5.42    2.46
               0.750    2.46 | 2.333    7.38 | 3.917    6.15 |  5.50    2.46
               0.833    3.69 | 2.417    7.38 | 4.000    6.15 |  5.58    2.46
               0.917    3.69 | 2.500    7.38 | 4.083    6.15 |  5.67    2.46
               1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
               1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
               1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
               1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
               1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
               1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
               1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
               1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

     Max.Eff.Inten.(mm/hr)=      95.94        32.71
                  over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.88 (ii)   13.91 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.28         0.08
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.08         0.09       0.156 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33        3.25
     RUNOFF VOLUME    (mm)=      59.50        16.26       22.75
     TOTAL RAINFALL   (mm)=      61.50        61.50       61.50
     RUNOFF COEFFICIENT   =       0.97         0.26        0.37

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.
```

```
      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  61.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
                0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
                0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
                1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
                1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
                1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
                1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.23
|ID= 1 DT= 5.0 min |   Total Imp(%)=  35.00   Dir. Conn.(%)=  25.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.08         0.15
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      39.16        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.69 | 3.250   95.94 |  4.83    3.69
               0.167    0.00 | 1.750    3.69 | 3.333   13.53 |  4.92    3.69
               0.250    0.00 | 1.833    6.15 | 3.417   13.53 |  5.00    3.69
               0.333    2.46 | 1.917    6.15 | 3.500   13.53 |  5.08    3.69
               0.417    2.46 | 2.000    6.15 | 3.583   13.53 |  5.17    3.69
               0.500    2.46 | 2.083    6.15 | 3.667   13.53 |  5.25    3.69
               0.583    2.46 | 2.167    6.15 | 3.750   13.53 |  5.33    2.46
               0.667    2.46 | 2.250    6.15 | 3.833    6.15 |  5.42    2.46
               0.750    2.46 | 2.333    7.38 | 3.917    6.15 |  5.50    2.46
               0.833    3.69 | 2.417    7.38 | 4.000    6.15 |  5.58    2.46
               0.917    3.69 | 2.500    7.38 | 4.083    6.15 |  5.67    2.46
               1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
               1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
               1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
               1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
               1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
               1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
               1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
               1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

     Max.Eff.Inten.(mm/hr)=      95.94        33.82
               over (min)        5.00        15.00
     Storage Coeff.  (min)=      1.48 (ii)   12.37 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.33         0.08

                                                          *TOTALS*
     PEAK FLOW       (cms)=      0.02         0.01         0.023 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.33          3.25
     RUNOFF VOLUME    (mm)=     59.50        16.51         27.23
     TOTAL RAINFALL   (mm)=     61.50        61.50         61.50
     RUNOFF COEFFICIENT   =      0.97         0.27          0.44

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  61.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
                0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
                0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
                1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
                1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
                1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
                1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   2.84
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  60.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.13         0.71
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     137.60        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.69 | 3.250   95.94 |  4.83    3.69
               0.167    0.00 | 1.750    3.69 | 3.333   13.53 |  4.92    3.69
               0.250    0.00 | 1.833    6.15 | 3.417   13.53 |  5.00    3.69
               0.333    2.46 | 1.917    6.15 | 3.500   13.53 |  5.08    3.69
               0.417    2.46 | 2.000    6.15 | 3.583   13.53 |  5.17    3.69
               0.500    2.46 | 2.083    6.15 | 3.667   13.53 |  5.25    3.69
               0.583    2.46 | 2.167    6.15 | 3.750   13.53 |  5.33    2.46
               0.667    2.46 | 2.250    6.15 | 3.833    6.15 |  5.42    2.46
               0.750    2.46 | 2.333    7.38 | 3.917    6.15 |  5.50    2.46
               0.833    3.69 | 2.417    7.38 | 4.000    6.15 |  5.58    2.46
               0.917    3.69 | 2.500    7.38 | 4.083    6.15 |  5.67    2.46
               1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
               1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
               1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
               1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
               1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
               1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
```

```
              1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
              1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

     Max.Eff.Inten.(mm/hr)=      95.94        66.78
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.15 (ii)   11.44 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.27         0.09
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.45         0.08          0.520 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      59.50        21.31          44.22
     TOTAL RAINFALL   (mm)=      61.50        61.50          61.50
     RUNOFF COEFFICIENT   =       0.97         0.35           0.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
                0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
                0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
                1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
                1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
                1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
                1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0208)|   Area    (ha)=   1.78
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  40.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.16         0.62
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     108.93        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.69 | 3.250   95.94 |  4.83    3.69
               0.167    0.00 | 1.750    3.69 | 3.333   13.53 |  4.92    3.69
               0.250    0.00 | 1.833    6.15 | 3.417   13.53 |  5.00    3.69
               0.333    2.46 | 1.917    6.15 | 3.500   13.53 |  5.08    3.69
               0.417    2.46 | 2.000    6.15 | 3.583   13.53 |  5.17    3.69
               0.500    2.46 | 2.083    6.15 | 3.667   13.53 |  5.25    3.69
               0.583    2.46 | 2.167    6.15 | 3.750   13.53 |  5.33    2.46
               0.667    2.46 | 2.250    6.15 | 3.833    6.15 |  5.42    2.46
               0.750    2.46 | 2.333    7.38 | 3.917    6.15 |  5.50    2.46
               0.833    3.69 | 2.417    7.38 | 4.000    6.15 |  5.58    2.46
               0.917    3.69 | 2.500    7.38 | 4.083    6.15 |  5.67    2.46
               1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
               1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
               1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
               1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
               1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
               1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
               1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
               1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

     Max.Eff.Inten.(mm/hr)=      95.94        75.04
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.73 (ii)   10.65 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.29         0.09
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.19         0.08          0.260 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      59.50        22.39          37.23
     TOTAL RAINFALL   (mm)=      61.50        61.50          61.50
     RUNOFF COEFFICIENT   =       0.97         0.36           0.61

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| DUHYD    (  0006)|
| Inlet Cap.= 0.211|
| #of Inlets=     1|
| Total(cms)=   0.2|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   1.78      0.26      3.25   37.23
     ================================================
     MAJOR SYS.(ID= 2):   0.05      0.05      3.25   37.23
     MINOR SYS.(ID= 3):   1.73      0.21      3.17   37.23

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.156     3.25    22.75
     + ID2= 2 (  0102):     0.23   0.023     3.25    27.23
       ================================================
       ID = 3 (  0001):     2.34   0.179     3.25    23.19

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.179     3.25    23.19
     + ID2= 2 (  0105):     0.59   0.029     3.33    14.55
       ================================================
       ID = 1 (  0001):     2.93   0.206     3.25    21.45

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     2.93   0.206     3.25    21.45
     + ID2= 2 (  0201):     2.84   0.520     3.25    44.22
       ====================================================
       ID = 3 (  0001):     5.77   0.727     3.25    32.66

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     5.77   0.727     3.25    32.66
     + ID2= 2 (  0006):     0.05   0.049     3.25    37.23
       ================================================
       ID = 1 (  0001):     5.82   0.775     3.25    32.70

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
                0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
                0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
                1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
                1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
                1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
                1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

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-------------------
| CALIB           |
| STANDHYD (  0202)|   Area    (ha)=  30.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  55.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      21.18         9.08
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     449.07        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    3.69 | 3.250   95.94 |  4.83    3.69
               0.167    0.00 | 1.750    3.69 | 3.333   13.53 |  4.92    3.69
               0.250    0.00 | 1.833    6.15 | 3.417   13.53 |  5.00    3.69
               0.333    2.46 | 1.917    6.15 | 3.500   13.53 |  5.08    3.69
               0.417    2.46 | 2.000    6.15 | 3.583   13.53 |  5.17    3.69
               0.500    2.46 | 2.083    6.15 | 3.667   13.53 |  5.25    3.69
               0.583    2.46 | 2.167    6.15 | 3.750   13.53 |  5.33    2.46
               0.667    2.46 | 2.250    6.15 | 3.833    6.15 |  5.42    2.46
               0.750    2.46 | 2.333    7.38 | 3.917    6.15 |  5.50    2.46
               0.833    3.69 | 2.417    7.38 | 4.000    6.15 |  5.58    2.46
               0.917    3.69 | 2.500    7.38 | 4.083    6.15 |  5.67    2.46
               1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
               1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
               1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
               1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
               1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
               1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
               1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
               1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

     Max.Eff.Inten.(mm/hr)=      95.94        59.79
               over (min)        5.00        20.00
     Storage Coeff.  (min)=      6.40 (ii)   15.07 (ii)
     Unit Hyd. Tpeak (min)=      5.00        20.00
     Unit Hyd. peak  (cms)=      0.18         0.07
                                                        *TOTALS*
     PEAK FLOW       (cms)=      4.16         0.78          4.680 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.42          3.25
     RUNOFF VOLUME    (mm)=     59.50        20.33         41.87
     TOTAL RAINFALL   (mm)=     61.50        61.50         61.50
     RUNOFF COEFFICIENT   =      0.97         0.33          0.68

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     5.82   0.775     3.25    32.70
     + ID2= 2 (  0202):    30.25   4.680     3.25    41.87
       ================================================
       ID = 3 (  0002):    36.07   5.455     3.25    40.39

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    6.15 |  3.75   13.53 |  5.50    2.46
                0.50    2.46 |  2.25    6.15 |  4.00    6.15 |  5.75    2.46
                0.75    2.46 |  2.50    7.38 |  4.25    6.15 |  6.00    2.46
                1.00    3.69 |  2.75    7.38 |  4.50    4.92 |  6.25    2.46
                1.25    3.69 |  3.00   36.90 |  4.75    4.92 |
                1.50    3.69 |  3.25   95.94 |  5.00    3.69 |
                1.75    3.69 |  3.50   13.53 |  5.25    3.69 |

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-------------------
| CALIB           |
| STANDHYD (  0203)|   Area    (ha)=   1.73
```

```
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.87         0.87
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     107.39        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.69	3.250	95.94	4.83	3.69
0.167	0.00	1.750	3.69	3.333	13.53	4.92	3.69
0.250	0.00	1.833	6.15	3.417	13.53	5.00	3.69
0.333	2.46	1.917	6.15	3.500	13.53	5.08	3.69
0.417	2.46	2.000	6.15	3.583	13.53	5.17	3.69
0.500	2.46	2.083	6.15	3.667	13.53	5.25	3.69
0.583	2.46	2.167	6.15	3.750	13.53	5.33	2.46
0.667	2.46	2.250	6.15	3.833	6.15	5.42	2.46
0.750	2.46	2.333	7.38	3.917	6.15	5.50	2.46
0.833	3.69	2.417	7.38	4.000	6.15	5.58	2.46
0.917	3.69	2.500	7.38	4.083	6.15	5.67	2.46
1.000	3.69	2.583	7.38	4.167	6.15	5.75	2.46
1.083	3.69	2.667	7.38	4.250	6.15	5.83	2.46
1.167	3.69	2.750	7.38	4.333	4.92	5.92	2.46
1.250	3.69	2.833	36.90	4.417	4.92	6.00	2.46
1.333	3.69	2.917	36.90	4.500	4.92	6.08	2.46
1.417	3.69	3.000	36.90	4.583	4.92	6.17	2.46
1.500	3.69	3.083	95.94	4.667	4.92	6.25	2.46
1.583	3.69	3.167	95.94	4.750	4.92		

```
     Max.Eff.Inten.(mm/hr)=      95.94        25.79
                 over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.71 (ii)   14.85 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.29         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.23         0.04          0.260 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.42           3.25
     RUNOFF VOLUME    (mm)=      59.50        14.58          37.04
     TOTAL RAINFALL   (mm)=      61.50        61.50          61.50
     RUNOFF COEFFICIENT   =       0.97         0.24           0.60

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0002):    36.07   5.455     3.25    40.39
     + ID2= 2 (  0203):     1.73   0.260     3.25    37.04
       ==========================================================
       ID = 3 (  0003):    37.80   5.715     3.25    40.24

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0004)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |  0.6590      1.1752
                         0.0390     0.3192   |  0.9040      1.3822
                         0.0470     0.4662   |  1.0480      1.6005
                         0.0510     0.5443   |  1.1130      1.7139
                         0.0860     0.6254   |  3.0220      1.8301
                         0.2250     0.7966   | 10.8910      2.0711
                         0.4210     0.9799   | 22.0560      2.3233

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)     37.805     5.715      3.25      40.24
   OUTFLOW: ID= 1 (  0004)     37.805     0.569      4.25      40.18

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  9.95
                  TIME SHIFT OF PEAK FLOW         (min)= 60.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  1.1010

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	6.15	3.75	13.53	5.50	2.46
0.50	2.46	2.25	6.15	4.00	6.15	5.75	2.46
0.75	2.46	2.50	7.38	4.25	6.15	6.00	2.46
1.00	3.69	2.75	7.38	4.50	4.92	6.25	2.46
1.25	3.69	3.00	36.90	4.75	4.92		
1.50	3.69	3.25	95.94	5.00	3.69		
1.75	3.69	3.50	13.53	5.25	3.69		

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--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=  12.81   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.16

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.69	3.250	95.94	4.83	3.69
0.167	0.00	1.750	3.69	3.333	13.53	4.92	3.69
0.250	0.00	1.833	6.15	3.417	13.53	5.00	3.69
0.333	2.46	1.917	6.15	3.500	13.53	5.08	3.69
0.417	2.46	2.000	6.15	3.583	13.53	5.17	3.69
0.500	2.46	2.083	6.15	3.667	13.53	5.25	3.69
0.583	2.46	2.167	6.15	3.750	13.53	5.33	2.46
0.667	2.46	2.250	6.15	3.833	6.15	5.42	2.46
0.750	2.46	2.333	7.38	3.917	6.15	5.50	2.46
0.833	3.69	2.417	7.38	4.000	6.15	5.58	2.46
0.917	3.69	2.500	7.38	4.083	6.15	5.67	2.46
1.000	3.69	2.583	7.38	4.167	6.15	5.75	2.46
1.083	3.69	2.667	7.38	4.250	6.15	5.83	2.46
1.167	3.69	2.750	7.38	4.333	4.92	5.92	2.46
1.250	3.69	2.833	36.90	4.417	4.92	6.00	2.46
1.333	3.69	2.917	36.90	4.500	4.92	6.08	2.46
1.417	3.69	3.000	36.90	4.583	4.92	6.17	2.46

```
              1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
              1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

     Unit Hyd Qpeak  (cms)=   0.422

     PEAK FLOW      (cms)=   0.174 (i)
     TIME TO PEAK   (hrs)=   4.500
     RUNOFF VOLUME   (mm)=  14.359
     TOTAL RAINFALL  (mm)=  61.500
     RUNOFF COEFFICIENT   =   0.233

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	6.15	3.75	13.53	5.50	2.46
0.50	2.46	2.25	6.15	4.00	6.15	5.75	2.46
0.75	2.46	2.50	7.38	4.25	6.15	6.00	2.46
1.00	3.69	2.75	7.38	4.50	4.92	6.25	2.46
1.25	3.69	3.00	36.90	4.75	4.92		
1.50	3.69	3.25	95.94	5.00	3.69		
1.75	3.69	3.50	13.53	5.25	3.69		

```
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.37
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      78.32        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.69	3.250	95.94	4.83	3.69
0.167	0.00	1.750	3.69	3.333	13.53	4.92	3.69
0.250	0.00	1.833	6.15	3.417	13.53	5.00	3.69
0.333	2.46	1.917	6.15	3.500	13.53	5.08	3.69
0.417	2.46	2.000	6.15	3.583	13.53	5.17	3.69
0.500	2.46	2.083	6.15	3.667	13.53	5.25	3.69
0.583	2.46	2.167	6.15	3.750	13.53	5.33	2.46
0.667	2.46	2.250	6.15	3.833	6.15	5.42	2.46
0.750	2.46	2.333	7.38	3.917	6.15	5.50	2.46
0.833	3.69	2.417	7.38	4.000	6.15	5.58	2.46
0.917	3.69	2.500	7.38	4.083	6.15	5.67	2.46
1.000	3.69	2.583	7.38	4.167	6.15	5.75	2.46
1.083	3.69	2.667	7.38	4.250	6.15	5.83	2.46
1.167	3.69	2.750	7.38	4.333	4.92	5.92	2.46
1.250	3.69	2.833	36.90	4.417	4.92	6.00	2.46
1.333	3.69	2.917	36.90	4.500	4.92	6.08	2.46
1.417	3.69	3.000	36.90	4.583	4.92	6.17	2.46
1.500	3.69	3.083	95.94	4.667	4.92	6.25	2.46
1.583	3.69	3.167	95.94	4.750	4.92		

```
     Max.Eff.Inten.(mm/hr)=      95.94        51.38
                 over (min)       5.00        15.00
     Storage Coeff.  (min)=      2.24 (ii)   11.45 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.30         0.09
                                                      *TOTALS*
     PEAK FLOW      (cms)=      0.11         0.03        0.137 (iii)
     TIME TO PEAK   (hrs)=      3.25         3.33         3.25
     RUNOFF VOLUME   (mm)=     59.50        19.03        37.23
     TOTAL RAINFALL  (mm)=     61.50        61.50        61.50
     RUNOFF COEFFICIENT   =     0.97         0.31         0.61

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\0488384e
| Ptotal= 61.50 mm |    Comments: SCS_06H_010Y
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	6.15	3.75	13.53	5.50	2.46
0.50	2.46	2.25	6.15	4.00	6.15	5.75	2.46
0.75	2.46	2.50	7.38	4.25	6.15	6.00	2.46
1.00	3.69	2.75	7.38	4.50	4.92	6.25	2.46
1.25	3.69	3.00	36.90	4.75	4.92		
1.50	3.69	3.25	95.94	5.00	3.69		
1.75	3.69	3.50	13.53	5.25	3.69		

```
--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.58         0.39
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      80.42        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	3.69	3.250	95.94	4.83	3.69
0.167	0.00	1.750	3.69	3.333	13.53	4.92	3.69
0.250	0.00	1.833	6.15	3.417	13.53	5.00	3.69
0.333	2.46	1.917	6.15	3.500	13.53	5.08	3.69
0.417	2.46	2.000	6.15	3.583	13.53	5.17	3.69
0.500	2.46	2.083	6.15	3.667	13.53	5.25	3.69
0.583	2.46	2.167	6.15	3.750	13.53	5.33	2.46
0.667	2.46	2.250	6.15	3.833	6.15	5.42	2.46
0.750	2.46	2.333	7.38	3.917	6.15	5.50	2.46
0.833	3.69	2.417	7.38	4.000	6.15	5.58	2.46
0.917	3.69	2.500	7.38	4.083	6.15	5.67	2.46

```
              1.000    3.69 | 2.583    7.38 | 4.167    6.15 |  5.75    2.46
              1.083    3.69 | 2.667    7.38 | 4.250    6.15 |  5.83    2.46
              1.167    3.69 | 2.750    7.38 | 4.333    4.92 |  5.92    2.46
              1.250    3.69 | 2.833   36.90 | 4.417    4.92 |  6.00    2.46
              1.333    3.69 | 2.917   36.90 | 4.500    4.92 |  6.08    2.46
              1.417    3.69 | 3.000   36.90 | 4.583    4.92 |  6.17    2.46
              1.500    3.69 | 3.083   95.94 | 4.667    4.92 |  6.25    2.46
              1.583    3.69 | 3.167   95.94 | 4.750    4.92 |

     Max.Eff.Inten.(mm/hr)=      95.94        51.38
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       2.28 (ii)   11.49 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.30         0.09
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.12         0.03          0.145 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      59.50        19.03          37.23
     TOTAL RAINFALL   (mm)=      61.50        61.50          61.50
     RUNOFF COEFFICIENT   =       0.97         0.31           0.61

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.92   0.137     3.25    37.23
      + ID2= 2 (  0205):     0.97   0.145     3.25    37.23
        ================================================
        ID = 3 (  0005):     1.89   0.282     3.25    37.23

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     1.89   0.282     3.25    37.23
      + ID2= 2 (  0207):    12.81   0.174     4.50    14.36
        ================================================
        ID = 1 (  0005):    14.70   0.305     3.25    17.30

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0005):    14.70   0.305     3.25    17.30
      + ID2= 2 (  0004):    37.80   0.569     4.25    40.18
        ================================================
        ID = 3 (  0005):    52.50   0.761     4.25    33.78

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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```

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       V    V   I    SSSSS  U   U    A    L             (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
         V V    I      SS   U   U A   A  L
          VV    I    SSSSS  UUUUU A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\98e0ec9e-e1dd-4f23-8e5c-ca5f6529dfe3\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\98e0ec9e-e1dd-4f23-8e5c-ca5f6529dfe3\scena


DATE: 03-13-2019                          TIME: 02:36:07

USER:


COMMENTS: _____________________________________________________


--------------------------------------------------------------------------------
---------------
  ***********************************************
  ** SIMULATION : SCS_06H_025Y                 **
  ***********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   0.59   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.19

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                        ---- TRANSFORMED HYETOGRAPH ----
 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

    Unit Hyd Qpeak  (cms)=   0.119

    PEAK FLOW       (cms)=   0.041 (i)
    TIME TO PEAK    (hrs)=   3.333
    RUNOFF VOLUME    (mm)=  19.973
    TOTAL RAINFALL   (mm)=  72.900
    RUNOFF COEFFICIENT   =   0.274

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
0.25     0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
0.50     2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
0.75     2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
1.00     4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
1.25     4.37 |  3.00   43.74 |  4.75    5.83 |
1.50     4.37 |  3.25  113.72 |  5.00    4.37 |
1.75     4.37 |  3.50   16.04 |  5.25    4.37 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53         1.58
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     118.60        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

    Max.Eff.Inten.(mm/hr)=     113.72        49.32
                 over (min)       5.00        15.00
    Storage Coeff.  (min)=       2.69 (ii)   12.05 (ii)
    Unit Hyd. Tpeak (min)=       5.00        15.00
    Unit Hyd. peak  (cms)=       0.29         0.09
                                                      *TOTALS*
    PEAK FLOW       (cms)=       0.10         0.13       0.208 (iii)
    TIME TO PEAK    (hrs)=       3.25         3.33        3.25
    RUNOFF VOLUME    (mm)=      70.90        22.15       29.46
    TOTAL RAINFALL   (mm)=      72.90        72.90       72.90
    RUNOFF COEFFICIENT   =       0.97         0.30        0.40

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  61.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
0.25     0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
0.50     2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
0.75     2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
1.00     4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
1.25     4.37 |  3.00   43.74 |  4.75    5.83 |
1.50     4.37 |  3.25  113.72 |  5.00    4.37 |
1.75     4.37 |  3.50   16.04 |  5.25    4.37 |

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--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.23
|ID= 1 DT= 5.0 min |   Total Imp(%)=  35.00   Dir. Conn.(%)=  25.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
```

```
     Surface Area     (ha)=       0.08         0.15
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      39.16        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
              0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
              0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
              0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
              0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
              0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
              0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
              0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
              0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
              0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
              0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
              1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
              1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
              1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
              1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
              1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
              1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
              1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
              1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

     Max.Eff.Inten.(mm/hr)=     113.72        50.90
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       1.38 (ii)   10.63 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.33         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.02         0.01          0.029 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      70.90        22.46          34.54
     TOTAL RAINFALL   (mm)=      72.90        72.90          72.90
     RUNOFF COEFFICIENT   =       0.97         0.31           0.47

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

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--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   2.84
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  60.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.13         0.71
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     137.60        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
              0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
              0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
              0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
              0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
              0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
              0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
              0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
              0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
              0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
              0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
              1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
              1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
              1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
              1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
              1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
              1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
              1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
              1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

     Max.Eff.Inten.(mm/hr)=     113.72        88.72
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.94 (ii)    7.66 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.28         0.13
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.54         0.13          0.669 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=      70.90        28.43          53.91
     TOTAL RAINFALL   (mm)=      72.90        72.90          72.90
     RUNOFF COEFFICIENT   =       0.97         0.39           0.74

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
```

```
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

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-------------------
| CALIB           |
| STANDHYD (  0208)|   Area    (ha)=   1.78
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  40.00
-------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.16         0.62
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    108.93        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
               0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
               0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
               0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
               0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
               0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
               0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
               0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
               0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
               0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
               0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
               1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
               1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
               1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
               1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
               1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
               1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
               1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
               1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

     Max.Eff.Inten.(mm/hr)=     113.72        99.27
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.55 (ii)    9.63 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.29         0.11
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.12          0.345 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=      70.90        29.73          46.20
     TOTAL RAINFALL   (mm)=      72.90        72.90          72.90
     RUNOFF COEFFICIENT   =       0.97         0.41           0.63

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------

| DUHYD    (  0006)|
| Inlet Cap.= 0.211|
| #of Inlets=     1|
| Total(cms)=   0.2|      AREA     QPEAK     TPEAK    R.V.
-------------------       (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   1.78      0.34      3.25   46.20
     ================================================
     MAJOR SYS.(ID= 2):   0.18      0.13      3.25   46.20
     MINOR SYS.(ID= 3):   1.60      0.21      3.08   46.20

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.208     3.25    29.46
     + ID2= 2 (  0102):     0.23   0.029     3.25    34.54
       ================================================
       ID = 3 (  0001):     2.34   0.237     3.25    29.96

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.237     3.25    29.96
     + ID2= 2 (  0105):     0.59   0.041     3.33    19.97
       ================================================
       ID = 1 (  0001):     2.93   0.275     3.25    27.95

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     2.93   0.275     3.25    27.95
     + ID2= 2 (  0201):     2.84   0.669     3.25    53.91
       ================================================
       ID = 3 (  0001):     5.77   0.944     3.25    40.73

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     5.77   0.944     3.25    40.73
     + ID2= 2 (  0006):     0.18   0.134     3.25    46.20
       ================================================
       ID = 1 (  0001):     5.95   1.078     3.25    40.89

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
```

```
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

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--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=  30.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  55.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      21.18         9.08
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     449.07        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
               0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
               0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
               0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
               0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
               0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
               0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
               0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
               0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
               0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
               0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
               1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
               1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
               1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
               1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
               1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
               1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
               1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
               1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

     Max.Eff.Inten.(mm/hr)=     113.72        79.75
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       5.98 (ii)   13.70 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.19         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       4.98         1.15         5.949 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33          3.25
     RUNOFF VOLUME    (mm)=      70.90        27.21         51.24
     TOTAL RAINFALL   (mm)=      72.90        72.90         72.90
     RUNOFF COEFFICIENT   =       0.97         0.37          0.70


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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--------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     5.95   1.078     3.25    40.89
     + ID2= 2 (  0202):    30.25   5.949     3.25    51.24
       ================================================
       ID = 3 (  0002):    36.20   7.027     3.25    49.54

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

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--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   1.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.87         0.87
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     107.39        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
               0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
               0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
               0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
               0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
               0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
               0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
               0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
               0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
               0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
               0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
               1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
               1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
               1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
               1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
               1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
               1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
               1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
```

```
              1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

     Max.Eff.Inten.(mm/hr)=     113.72        35.56
                 over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.53 (ii)   13.21 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.29         0.08
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.27         0.05          0.317 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      70.90        20.02          45.46
     TOTAL RAINFALL   (mm)=      72.90        72.90          72.90
     RUNOFF COEFFICIENT   =        0.97         0.27           0.62

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0002):    36.20   7.027     3.25    49.54
     + ID2= 2 (  0203):     1.73   0.317     3.25    45.46
       ====================================================
       ID = 3 (  0003):    37.93   7.344     3.25    49.35

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
------------------
| RESERVOIR(  0004)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                        0.0000     0.0000   |   0.6590      1.1752
                        0.0390     0.3192   |   0.9040      1.3822
                        0.0470     0.4662   |   1.0480      1.6005
                        0.0510     0.5443   |   1.1130      1.7139
                        0.0860     0.6254   |   3.0220      1.8301
                        0.2250     0.7966   |  10.8910      2.0711
                        0.4210     0.9799   |  22.0560      2.3233

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)     37.927      7.344      3.25      49.35
   OUTFLOW: ID= 1 (  0004)     37.927      0.822      4.00      49.30

                 PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.20
                 TIME SHIFT OF PEAK FLOW         (min)= 45.00
                 MAXIMUM  STORAGE   USED       (ha.m.)=  1.3133

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

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--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=  12.81   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.16

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
                0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
                0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
                0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
                0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
                0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
                0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
                0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
                0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
                0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
                0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
                1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
                1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
                1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
                1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
                1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
                1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
                1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
                1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

     Unit Hyd Qpeak  (cms)=   0.422

     PEAK FLOW       (cms)=   0.241 (i)
     TIME TO PEAK    (hrs)=   4.500
     RUNOFF VOLUME    (mm)=  19.769
     TOTAL RAINFALL   (mm)=  72.900
     RUNOFF COEFFICIENT   =   0.271

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
                0.50    2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
                0.75    2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
                1.00    4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
                1.25    4.37 |  3.00   43.74 |  4.75    5.83 |
                1.50    4.37 |  3.25  113.72 |  5.00    4.37 |
                1.75    4.37 |  3.50   16.04 |  5.25    4.37 |

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--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.55         0.37
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     78.32        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
              0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
              0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
              0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
              0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
              0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
              0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
              0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
              0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
              0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
              0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
              1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
              1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
              1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
              1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
              1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
              1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
              1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
              1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

     Max.Eff.Inten.(mm/hr)=     113.72        68.91
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       2.10 (ii)   10.29 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.13         0.05          0.169 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      70.90        25.60          45.98
     TOTAL RAINFALL   (mm)=      72.90        72.90          72.90
     RUNOFF COEFFICIENT   =       0.97         0.35           0.63

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\76197674
| Ptotal= 72.90 mm |    Comments: SCS_06H_025Y
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.25     0.00 |  2.00    7.29 |  3.75   16.04 |  5.50    2.92
              0.50     2.92 |  2.25    7.29 |  4.00    7.29 |  5.75    2.92
              0.75     2.92 |  2.50    8.75 |  4.25    7.29 |  6.00    2.92
              1.00     4.37 |  2.75    8.75 |  4.50    5.83 |  6.25    2.92
              1.25     4.37 |  3.00   43.74 |  4.75    5.83 |
              1.50     4.37 |  3.25  113.72 |  5.00    4.37 |
              1.75     4.37 |  3.50   16.04 |  5.25    4.37 |

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--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.58         0.39
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     80.42        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.00 | 1.667    4.37 | 3.250  113.72 |  4.83    4.37
              0.167    0.00 | 1.750    4.37 | 3.333   16.04 |  4.92    4.37
              0.250    0.00 | 1.833    7.29 | 3.417   16.04 |  5.00    4.37
              0.333    2.92 | 1.917    7.29 | 3.500   16.04 |  5.08    4.37
              0.417    2.92 | 2.000    7.29 | 3.583   16.04 |  5.17    4.37
              0.500    2.92 | 2.083    7.29 | 3.667   16.04 |  5.25    4.37
              0.583    2.92 | 2.167    7.29 | 3.750   16.04 |  5.33    2.92
              0.667    2.92 | 2.250    7.29 | 3.833    7.29 |  5.42    2.92
              0.750    2.92 | 2.333    8.75 | 3.917    7.29 |  5.50    2.92
              0.833    4.37 | 2.417    8.75 | 4.000    7.29 |  5.58    2.92
              0.917    4.37 | 2.500    8.75 | 4.083    7.29 |  5.67    2.92
              1.000    4.37 | 2.583    8.75 | 4.167    7.29 |  5.75    2.92
              1.083    4.37 | 2.667    8.75 | 4.250    7.29 |  5.83    2.92
              1.167    4.37 | 2.750    8.75 | 4.333    5.83 |  5.92    2.92
              1.250    4.37 | 2.833   43.74 | 4.417    5.83 |  6.00    2.92
              1.333    4.37 | 2.917   43.74 | 4.500    5.83 |  6.08    2.92
              1.417    4.37 | 3.000   43.74 | 4.583    5.83 |  6.17    2.92
              1.500    4.37 | 3.083  113.72 | 4.667    5.83 |  6.25    2.92
              1.583    4.37 | 3.167  113.72 | 4.750    5.83 |

     Max.Eff.Inten.(mm/hr)=     113.72        68.91
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       2.13 (ii)   10.32 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.05          0.178 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      70.90        25.60          45.98
     TOTAL RAINFALL   (mm)=      72.90        72.90          72.90
     RUNOFF COEFFICIENT   =       0.97         0.35           0.63

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0005)|
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```
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.92   0.169     3.25    45.98
     + ID2= 2 (  0205):     0.97   0.178     3.25    45.98
       ================================================
       ID = 3 (  0005):     1.89   0.348     3.25    45.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0005):     1.89   0.348     3.25    45.98
     + ID2= 2 (  0207):    12.81   0.241     4.50    19.77
       ================================================
       ID = 1 (  0005):    14.70   0.382     3.25    23.14

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):    14.70   0.382     3.25    23.14
     + ID2= 2 (  0004):    37.93   0.822     4.00    49.30
       ================================================
       ID = 3 (  0005):    52.63   1.077     4.25    41.99

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
================================================================================
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       V    V   I    SSSSS  U   U    A    L             (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\b981b373-7fdd-4bcf-b9bd-3629c06934a6\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\b981b373-7fdd-4bcf-b9bd-3629c06934a6\scena


DATE: 03-13-2019                          TIME: 02:36:07

USER:

COMMENTS: _____________________________________________________

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  ************************************************
  ** SIMULATION : SCS_06H_050Y                  **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

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-------------------
| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   0.59   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.19

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
               0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
               1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
               1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
               1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
               1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
               1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
               1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
               1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
               1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

    Unit Hyd Qpeak  (cms)=   0.119

    PEAK FLOW       (cms)=   0.050 (i)
    TIME TO PEAK    (hrs)=   3.333
    RUNOFF VOLUME    (mm)=  24.386
    TOTAL RAINFALL   (mm)=  81.400
    RUNOFF COEFFICIENT   =   0.300

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

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--------------------
| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53         1.58
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     118.60        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
               0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
               1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
               1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
               1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
               1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
               1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
               1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
               1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
               1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Max.Eff.Inten.(mm/hr)=     126.98        59.79
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.57 (ii)   11.24 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.29         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.16         0.249 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33          3.25
     RUNOFF VOLUME    (mm)=      79.40        26.91         34.78
     TOTAL RAINFALL   (mm)=      81.40        81.40         81.40
     RUNOFF COEFFICIENT   =       0.98         0.33          0.43

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

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--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.23
|ID= 1 DT= 5.0 min |   Total Imp(%)=  35.00   Dir. Conn.(%)=  25.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.08         0.15
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      39.16        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
               0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
               1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
               1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
               1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
               1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
               1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
               1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
               1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
               1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Max.Eff.Inten.(mm/hr)=     126.98        61.67
               over (min)        5.00        10.00
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     Storage Coeff.  (min)=       1.32 (ii)    9.89 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.33         0.11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.02         0.02          0.038 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      79.40        27.27          40.28
     TOTAL RAINFALL   (mm)=      81.40        81.40          81.40
     RUNOFF COEFFICIENT   =       0.98         0.33           0.49

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

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--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   2.84
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  60.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.13         0.71
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     137.60        40.00
     Mannings n            =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
               0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
               1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
               1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
               1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
               1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
               1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
               1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
               1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
               1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Max.Eff.Inten.(mm/hr)=     126.98       106.09
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.81 (ii)    7.33 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.28         0.13
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.60         0.16          0.762 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=      79.40        34.08          61.27
     TOTAL RAINFALL   (mm)=      81.40        81.40          81.40
     RUNOFF COEFFICIENT   =       0.98         0.42           0.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

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--------------------
| CALIB            |
| STANDHYD (  0208)|   Area    (ha)=   1.78
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  40.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.16         0.62
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     108.93        40.00
     Mannings n            =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
```

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              0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
              0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
              0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
              0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
              0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
              1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
              1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
              1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
              1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
              1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
              1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
              1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
              1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Max.Eff.Inten.(mm/hr)=     126.98       118.38
                 over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.44 (ii)    9.04 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.30         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.25         0.15          0.399 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=      79.40        35.56          53.09
     TOTAL RAINFALL   (mm)=      81.40        81.40          81.40
     RUNOFF COEFFICIENT   =       0.98         0.44           0.65

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| DUHYD    (  0006)|
| Inlet Cap.= 0.211|
| #of Inlets=     1|
| Total(cms)=   0.2|      AREA     QPEAK     TPEAK    R.V.
-------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   1.78      0.40      3.25   53.09
     ================================================
     MAJOR SYS.(ID= 2):   0.23      0.19      3.25   53.09
     MINOR SYS.(ID= 3):   1.55      0.21      3.08   53.09

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.249     3.25    34.78
     + ID2= 2 (  0102):     0.23   0.038     3.25    40.28
       ================================================
       ID = 3 (  0001):     2.34   0.286     3.25    35.32

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.286     3.25    35.32
     + ID2= 2 (  0105):     0.59   0.050     3.33    24.39
       ================================================
       ID = 1 (  0001):     2.93   0.332     3.25    33.12

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     2.93   0.332     3.25    33.12
     + ID2= 2 (  0201):     2.84   0.762     3.25    61.27
       ================================================
       ID = 3 (  0001):     5.77   1.094     3.25    46.97

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     5.77   1.094     3.25    46.97
     + ID2= 2 (  0006):     0.23   0.188     3.25    53.09
       ================================================
       ID = 1 (  0001):     6.00   1.282     3.25    47.21

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

--------------------------------------------------------------------------------

-------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=  30.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  55.00
-------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      21.18          9.08
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     449.07         40.00
     Mannings n            =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
```

```
              0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
              0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
              0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
              0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
              0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
              0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
              0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
              0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
              0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
              1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
              1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
              1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
              1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
              1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
              1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
              1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
              1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

    Max.Eff.Inten.(mm/hr)=     126.98        95.60
                over (min)        5.00        15.00
    Storage Coeff.  (min)=       5.72 (ii)   12.90 (ii)
    Unit Hyd. Tpeak (min)=       5.00        15.00
    Unit Hyd. peak  (cms)=       0.20         0.08
                                                    *TOTALS*
    PEAK FLOW       (cms)=       5.60         1.43          6.807 (iii)
    TIME TO PEAK    (hrs)=       3.25         3.33           3.25
    RUNOFF VOLUME    (mm)=      79.40        32.71          58.39
    TOTAL RAINFALL   (mm)=      81.40        81.40          81.40
    RUNOFF COEFFICIENT   =       0.98         0.40           0.72


      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  61.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
-------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     6.00   1.282     3.25    47.21
     + ID2= 2 (  0202):    30.25   6.807     3.25    58.39
       ================================================
       ID = 3 (  0002):    36.25   8.089     3.25    56.54

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
-------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
               0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
               0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
               1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
               1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
               1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
               1.75    4.88 |  3.50   17.91 |  5.25    4.88 |
```

```
-------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   1.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
-------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.87         0.87
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     107.39        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                                ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                    hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
                  0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
                  0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
                  0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
                  0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
                  0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
                  0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
                  0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
                  0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
                  0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
                  0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
                  1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
                  1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
                  1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
                  1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
                  1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
                  1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
                  1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
                  1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Max.Eff.Inten.(mm/hr)=     126.98        48.04
                over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.42 (ii)   11.89 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.30         0.09
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.30         0.07          0.363 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.33           3.25
     RUNOFF VOLUME    (mm)=      79.40        24.44          51.92
     TOTAL RAINFALL   (mm)=      81.40        81.40          81.40
     RUNOFF COEFFICIENT   =       0.98         0.30           0.64

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0002):    36.25   8.089     3.25    56.54
     + ID2= 2 (  0203):     1.73   0.363     3.25    51.92
       ================================================
       ID = 3 (  0003):    37.98   8.451     3.25    56.33

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0004)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.6590      1.1752
                          0.0390     0.3192   |   0.9040      1.3822
                          0.0470     0.4662   |   1.0480      1.6005
                          0.0510     0.5443   |   1.1130      1.7139
                          0.0860     0.6254   |   3.0220      1.8301
                          0.2250     0.7966   |  10.8910      2.0711
                          0.4210     0.9799   |  22.0560      2.3233

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)     37.983     8.451      3.25      56.33
   OUTFLOW: ID= 1 (  0004)     37.983     0.970      4.00      56.27

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.48
                  TIME SHIFT OF PEAK FLOW         (min)= 45.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  1.4829

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
               0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
               0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
               1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
               1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
               1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
               1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=  12.81   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.16

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
               0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
               1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
               1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
               1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
               1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
               1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
               1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
               1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
               1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Unit Hyd Qpeak  (cms)=   0.422

     PEAK FLOW       (cms)=   0.296 (i)
     TIME TO PEAK    (hrs)=   4.500
     RUNOFF VOLUME    (mm)=  24.175
     TOTAL RAINFALL   (mm)=  81.400
     RUNOFF COEFFICIENT   =   0.297

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
               0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
               0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
               1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
               1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
               1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
               1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

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--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------

                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55          0.37
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      78.32         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
               0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
               1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
               1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
               1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
               1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
               1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
```

```
              1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
              1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
              1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Max.Eff.Inten.(mm/hr)=     126.98        82.89
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.01 (ii)    9.61 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.06         0.205 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25          3.25
     RUNOFF VOLUME    (mm)=      79.40        30.87         52.71
     TOTAL RAINFALL   (mm)=      81.40        81.40         81.40
     RUNOFF COEFFICIENT   =       0.98         0.38          0.65

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\a55243cf
| Ptotal= 81.40 mm |    Comments: SCS_06H_050Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.14 |  3.75   17.91 |  5.50    3.26
                0.50    3.26 |  2.25    8.14 |  4.00    8.14 |  5.75    3.26
                0.75    3.26 |  2.50    9.77 |  4.25    8.14 |  6.00    3.26
                1.00    4.88 |  2.75    9.77 |  4.50    6.51 |  6.25    3.26
                1.25    4.88 |  3.00   48.84 |  4.75    6.51 |
                1.50    4.88 |  3.25  126.98 |  5.00    4.88 |
                1.75    4.88 |  3.50   17.91 |  5.25    4.88 |

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-------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
-------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.58         0.39
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      80.42        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    4.88 | 3.250  126.98 |  4.83    4.88
               0.167    0.00 | 1.750    4.88 | 3.333   17.91 |  4.92    4.88
               0.250    0.00 | 1.833    8.14 | 3.417   17.91 |  5.00    4.88
               0.333    3.26 | 1.917    8.14 | 3.500   17.91 |  5.08    4.88
               0.417    3.26 | 2.000    8.14 | 3.583   17.91 |  5.17    4.88
               0.500    3.26 | 2.083    8.14 | 3.667   17.91 |  5.25    4.88
               0.583    3.26 | 2.167    8.14 | 3.750   17.91 |  5.33    3.26
               0.667    3.26 | 2.250    8.14 | 3.833    8.14 |  5.42    3.26
               0.750    3.26 | 2.333    9.77 | 3.917    8.14 |  5.50    3.26
               0.833    4.88 | 2.417    9.77 | 4.000    8.14 |  5.58    3.26
               0.917    4.88 | 2.500    9.77 | 4.083    8.14 |  5.67    3.26
               1.000    4.88 | 2.583    9.77 | 4.167    8.14 |  5.75    3.26
               1.083    4.88 | 2.667    9.77 | 4.250    8.14 |  5.83    3.26
               1.167    4.88 | 2.750    9.77 | 4.333    6.51 |  5.92    3.26
               1.250    4.88 | 2.833   48.84 | 4.417    6.51 |  6.00    3.26
               1.333    4.88 | 2.917   48.84 | 4.500    6.51 |  6.08    3.26
               1.417    4.88 | 3.000   48.84 | 4.583    6.51 |  6.17    3.26
               1.500    4.88 | 3.083  126.98 | 4.667    6.51 |  6.25    3.26
               1.583    4.88 | 3.167  126.98 | 4.750    6.51 |

     Max.Eff.Inten.(mm/hr)=     126.98        82.89
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.04 (ii)    9.65 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.06         0.216 (iii)
     TIME TO PEAK    (hrs)=       3.25         3.25          3.25
     RUNOFF VOLUME    (mm)=      79.40        30.87         52.71
     TOTAL RAINFALL   (mm)=      81.40        81.40         81.40
     RUNOFF COEFFICIENT   =       0.98         0.38          0.65

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.92   0.205     3.25    52.71
     + ID2= 2 (  0205):     0.97   0.216     3.25    52.71
       ================================================
       ID = 3 (  0005):     1.89   0.421     3.25    52.71

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0005):     1.89   0.421     3.25    52.71
     + ID2= 2 (  0207):    12.81   0.296     4.50    24.18
       ================================================
       ID = 1 (  0005):    14.70   0.464     3.25    27.84

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):    14.70   0.464     3.25    27.84
     + ID2= 2 (  0004):    37.98   0.970     4.00    56.27
       ================================================
       ID = 3 (  0005):    52.68   1.283     4.25    48.34

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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       V    V   I    SSSSS  U   U    A    L              (v 5.1.2000)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\ed3e1f50-c917-4185-b65f-1bfc96d674c9\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\ed3e1f50-c917-4185-b65f-1bfc96d674c9\scena


DATE: 03-13-2019                          TIME: 02:36:07

USER:


COMMENTS: _____________________________________________________

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  ************************************************
  ** SIMULATION : SCS_06H_100Y                  **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
| Ptotal= 89.90 mm |    Comments: SCS_06H_100Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.99 |  3.75   19.78 |  5.50    3.60
                0.50    3.60 |  2.25    8.99 |  4.00    8.99 |  5.75    3.60
                0.75    3.60 |  2.50   10.79 |  4.25    8.99 |  6.00    3.60
                1.00    5.39 |  2.75   10.79 |  4.50    7.19 |  6.25    3.60
                1.25    5.39 |  3.00   53.94 |  4.75    7.19 |
                1.50    5.39 |  3.25  140.24 |  5.00    5.39 |
                1.75    5.39 |  3.50   19.78 |  5.25    5.39 |

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--------------------
| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   0.59   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.19

      NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
                 0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
                 0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
                 0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
                 0.417    3.60 | 2.000    8.99 | 3.583   19.78 |  5.17    5.39
                 0.500    3.60 | 2.083    8.99 | 3.667   19.78 |  5.25    5.39
                 0.583    3.60 | 2.167    8.99 | 3.750   19.78 |  5.33    3.60
                 0.667    3.60 | 2.250    8.99 | 3.833    8.99 |  5.42    3.60
                 0.750    3.60 | 2.333   10.79 | 3.917    8.99 |  5.50    3.60
                 0.833    5.39 | 2.417   10.79 | 4.000    8.99 |  5.58    3.60
                 0.917    5.39 | 2.500   10.79 | 4.083    8.99 |  5.67    3.60
                 1.000    5.39 | 2.583   10.79 | 4.167    8.99 |  5.75    3.60
                 1.083    5.39 | 2.667   10.79 | 4.250    8.99 |  5.83    3.60
                 1.167    5.39 | 2.750   10.79 | 4.333    7.19 |  5.92    3.60
                 1.250    5.39 | 2.833   53.94 | 4.417    7.19 |  6.00    3.60
                 1.333    5.39 | 2.917   53.94 | 4.500    7.19 |  6.08    3.60
                 1.417    5.39 | 3.000   53.94 | 4.583    7.19 |  6.17    3.60
                 1.500    5.39 | 3.083  140.24 | 4.667    7.19 |  6.25    3.60
                 1.583    5.39 | 3.167  140.24 | 4.750    7.19 |

     Unit Hyd Qpeak  (cms)=   0.119

     PEAK FLOW       (cms)=   0.060 (i)
     TIME TO PEAK    (hrs)=   3.333
     RUNOFF VOLUME    (mm)=  29.079
     TOTAL RAINFALL   (mm)=  89.900
     RUNOFF COEFFICIENT   =   0.323

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
| Ptotal= 89.90 mm |    Comments: SCS_06H_100Y
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.99 |  3.75   19.78 |  5.50    3.60
                0.50    3.60 |  2.25    8.99 |  4.00    8.99 |  5.75    3.60
                0.75    3.60 |  2.50   10.79 |  4.25    8.99 |  6.00    3.60
                1.00    5.39 |  2.75   10.79 |  4.50    7.19 |  6.25    3.60
                1.25    5.39 |  3.00   53.94 |  4.75    7.19 |
                1.50    5.39 |  3.25  140.24 |  5.00    5.39 |
                1.75    5.39 |  3.50   19.78 |  5.25    5.39 |

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--------------------
| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------

                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53          1.58
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     118.60         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	5.39	3.250	140.24	4.83	5.39
0.167	0.00	1.750	5.39	3.333	19.78	4.92	5.39
0.250	0.00	1.833	8.99	3.417	19.78	5.00	5.39
0.333	3.60	1.917	8.99	3.500	19.78	5.08	5.39
0.417	3.60	2.000	8.99	3.583	19.78	5.17	5.39
0.500	3.60	2.083	8.99	3.667	19.78	5.25	5.39
0.583	3.60	2.167	8.99	3.750	19.78	5.33	3.60
0.667	3.60	2.250	8.99	3.833	8.99	5.42	3.60
0.750	3.60	2.333	10.79	3.917	8.99	5.50	3.60
0.833	5.39	2.417	10.79	4.000	8.99	5.58	3.60
0.917	5.39	2.500	10.79	4.083	8.99	5.67	3.60
1.000	5.39	2.583	10.79	4.167	8.99	5.75	3.60
1.083	5.39	2.667	10.79	4.250	8.99	5.83	3.60
1.167	5.39	2.750	10.79	4.333	7.19	5.92	3.60
1.250	5.39	2.833	53.94	4.417	7.19	6.00	3.60
1.333	5.39	2.917	53.94	4.500	7.19	6.08	3.60
1.417	5.39	3.000	53.94	4.583	7.19	6.17	3.60
1.500	5.39	3.083	140.24	4.667	7.19	6.25	3.60
1.583	5.39	3.167	140.24	4.750	7.19		

			TOTALS
Max.Eff.Inten.(mm/hr)=	140.24	70.84	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.47 (ii)	10.57 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.09	
PEAK FLOW (cms)=	0.12	0.20	0.292 (iii)
TIME TO PEAK (hrs)=	3.25	3.33	3.25
RUNOFF VOLUME (mm)=	87.90	31.94	40.34
TOTAL RAINFALL (mm)=	89.90	89.90	89.90
RUNOFF COEFFICIENT =	0.98	0.36	0.45

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
Ptotal= 89.90 mm	Comments: SCS_06H_100Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	8.99	3.75	19.78	5.50	3.60
0.50	3.60	2.25	8.99	4.00	8.99	5.75	3.60
0.75	3.60	2.50	10.79	4.25	8.99	6.00	3.60
1.00	5.39	2.75	10.79	4.50	7.19	6.25	3.60
1.25	5.39	3.00	53.94	4.75	7.19		
1.50	5.39	3.25	140.24	5.00	5.39		
1.75	5.39	3.50	19.78	5.25	5.39		

CALIB	
STANDHYD (0102)	Area (ha)= 0.23
ID= 1 DT= 5.0 min	Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.08	0.15
Dep. Storage (mm)=	2.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	39.16	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	5.39	3.250	140.24	4.83	5.39
0.167	0.00	1.750	5.39	3.333	19.78	4.92	5.39
0.250	0.00	1.833	8.99	3.417	19.78	5.00	5.39
0.333	3.60	1.917	8.99	3.500	19.78	5.08	5.39
0.417	3.60	2.000	8.99	3.583	19.78	5.17	5.39
0.500	3.60	2.083	8.99	3.667	19.78	5.25	5.39
0.583	3.60	2.167	8.99	3.750	19.78	5.33	3.60
0.667	3.60	2.250	8.99	3.833	8.99	5.42	3.60
0.750	3.60	2.333	10.79	3.917	8.99	5.50	3.60
0.833	5.39	2.417	10.79	4.000	8.99	5.58	3.60
0.917	5.39	2.500	10.79	4.083	8.99	5.67	3.60
1.000	5.39	2.583	10.79	4.167	8.99	5.75	3.60
1.083	5.39	2.667	10.79	4.250	8.99	5.83	3.60
1.167	5.39	2.750	10.79	4.333	7.19	5.92	3.60
1.250	5.39	2.833	53.94	4.417	7.19	6.00	3.60
1.333	5.39	2.917	53.94	4.500	7.19	6.08	3.60
1.417	5.39	3.000	53.94	4.583	7.19	6.17	3.60
1.500	5.39	3.083	140.24	4.667	7.19	6.25	3.60
1.583	5.39	3.167	140.24	4.750	7.19		

			TOTALS
Max.Eff.Inten.(mm/hr)=	140.24	73.02	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.27 (ii)	9.28 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.12	
PEAK FLOW (cms)=	0.02	0.02	0.044 (iii)
TIME TO PEAK (hrs)=	3.25	3.25	3.25
RUNOFF VOLUME (mm)=	87.90	32.35	46.22
TOTAL RAINFALL (mm)=	89.90	89.90	89.90
RUNOFF COEFFICIENT =	0.98	0.36	0.51

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
Ptotal= 89.90 mm	Comments: SCS_06H_100Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	8.99	3.75	19.78	5.50	3.60
0.50	3.60	2.25	8.99	4.00	8.99	5.75	3.60
0.75	3.60	2.50	10.79	4.25	8.99	6.00	3.60
1.00	5.39	2.75	10.79	4.50	7.19	6.25	3.60
1.25	5.39	3.00	53.94	4.75	7.19		
1.50	5.39	3.25	140.24	5.00	5.39		

```
               1.75    5.39 |  3.50   19.78 |  5.25    5.39 |
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-------------------
| CALIB           |
| STANDHYD (  0201)|   Area    (ha)=   2.84
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  60.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      2.13         0.71
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    137.60        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                         ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
               0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
               0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
               0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
               0.417    3.60 | 2.000    8.99 | 3.583   19.78 |  5.17    5.39
               0.500    3.60 | 2.083    8.99 | 3.667   19.78 |  5.25    5.39
               0.583    3.60 | 2.167    8.99 | 3.750   19.78 |  5.33    3.60
               0.667    3.60 | 2.250    8.99 | 3.833    8.99 |  5.42    3.60
               0.750    3.60 | 2.333   10.79 | 3.917    8.99 |  5.50    3.60
               0.833    5.39 | 2.417   10.79 | 4.000    8.99 |  5.58    3.60
               0.917    5.39 | 2.500   10.79 | 4.083    8.99 |  5.67    3.60
               1.000    5.39 | 2.583   10.79 | 4.167    8.99 |  5.75    3.60
               1.083    5.39 | 2.667   10.79 | 4.250    8.99 |  5.83    3.60
               1.167    5.39 | 2.750   10.79 | 4.333    7.19 |  5.92    3.60
               1.250    5.39 | 2.833   53.94 | 4.417    7.19 |  6.00    3.60
               1.333    5.39 | 2.917   53.94 | 4.500    7.19 |  6.08    3.60
               1.417    5.39 | 3.000   53.94 | 4.583    7.19 |  6.17    3.60
               1.500    5.39 | 3.083  140.24 | 4.667    7.19 |  6.25    3.60
               1.583    5.39 | 3.167  140.24 | 4.750    7.19 |

     Max.Eff.Inten.(mm/hr)=     140.24       124.15
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      2.70 (ii)    7.05 (ii)
     Unit Hyd. Tpeak (min)=      5.00        10.00
     Unit Hyd. peak  (cms)=      0.29         0.14
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.66         0.19          0.856 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=     87.90        40.00          68.74
     TOTAL RAINFALL   (mm)=     89.90        89.90          89.90
     RUNOFF COEFFICIENT   =      0.98         0.44           0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
| Ptotal= 89.90 mm |    Comments: SCS_06H_100Y
-------------------
```

```
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25    0.00 |  2.00    8.99 |  3.75   19.78 |  5.50    3.60
               0.50    3.60 |  2.25    8.99 |  4.00    8.99 |  5.75    3.60
               0.75    3.60 |  2.50   10.79 |  4.25    8.99 |  6.00    3.60
               1.00    5.39 |  2.75   10.79 |  4.50    7.19 |  6.25    3.60
               1.25    5.39 |  3.00   53.94 |  4.75    7.19 |
               1.50    5.39 |  3.25  140.24 |  5.00    5.39 |
               1.75    5.39 |  3.50   19.78 |  5.25    5.39 |

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-------------------
| CALIB           |
| STANDHYD (  0208)|   Area    (ha)=   1.78
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  40.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.16         0.62
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    108.93        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                         ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
               0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
               0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
               0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
               0.417    3.60 | 2.000    8.99 | 3.583   19.78 |  5.17    5.39
               0.500    3.60 | 2.083    8.99 | 3.667   19.78 |  5.25    5.39
               0.583    3.60 | 2.167    8.99 | 3.750   19.78 |  5.33    3.60
               0.667    3.60 | 2.250    8.99 | 3.833    8.99 |  5.42    3.60
               0.750    3.60 | 2.333   10.79 | 3.917    8.99 |  5.50    3.60
               0.833    5.39 | 2.417   10.79 | 4.000    8.99 |  5.58    3.60
               0.917    5.39 | 2.500   10.79 | 4.083    8.99 |  5.67    3.60
               1.000    5.39 | 2.583   10.79 | 4.167    8.99 |  5.75    3.60
               1.083    5.39 | 2.667   10.79 | 4.250    8.99 |  5.83    3.60
               1.167    5.39 | 2.750   10.79 | 4.333    7.19 |  5.92    3.60
               1.250    5.39 | 2.833   53.94 | 4.417    7.19 |  6.00    3.60
               1.333    5.39 | 2.917   53.94 | 4.500    7.19 |  6.08    3.60
               1.417    5.39 | 3.000   53.94 | 4.583    7.19 |  6.17    3.60
               1.500    5.39 | 3.083  140.24 | 4.667    7.19 |  6.25    3.60
               1.583    5.39 | 3.167  140.24 | 4.750    7.19 |

     Max.Eff.Inten.(mm/hr)=     140.24       138.20
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      2.35 (ii)    8.55 (ii)
     Unit Hyd. Tpeak (min)=      5.00        10.00
     Unit Hyd. peak  (cms)=      0.30         0.12
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.28         0.18          0.455 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.25           3.25
     RUNOFF VOLUME    (mm)=     87.90        41.64          60.14
     TOTAL RAINFALL   (mm)=     89.90        89.90          89.90
     RUNOFF COEFFICIENT   =      0.98         0.46           0.67

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

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--------------------------------------------------------------------------------
------------------
| DUHYD    (  0006)|
| Inlet Cap.= 0.211|
| #of Inlets=     1|
| Total(cms)=   0.2|      AREA     QPEAK     TPEAK     R.V.
------------------        (ha)     (cms)     (hrs)     (mm)
     TOTAL HYD.(ID= 1):   1.78      0.45      3.25    60.14
     ====================================================
     MAJOR SYS.(ID= 2):   0.29      0.24      3.25    60.14
     MINOR SYS.(ID= 3):   1.49      0.21      3.08    60.14

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0101):     2.11   0.292     3.25    40.34
      + ID2= 2 (  0102):     0.23   0.044     3.25    46.22
        ================================================
        ID = 3 (  0001):     2.34   0.336     3.25    40.91

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):     2.34   0.336     3.25    40.91
      + ID2= 2 (  0105):     0.59   0.060     3.33    29.08
        ================================================
        ID = 1 (  0001):     2.93   0.391     3.25    38.53

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     2.93   0.391     3.25    38.53
      + ID2= 2 (  0201):     2.84   0.856     3.25    68.74
        ================================================
        ID = 3 (  0001):     5.77   1.247     3.25    53.40

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):     5.77   1.247     3.25    53.40
      + ID2= 2 (  0006):     0.29   0.244     3.25    60.14
        ================================================
        ID = 1 (  0001):     6.06   1.491     3.25    53.72

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
| Ptotal= 89.90 mm |    Comments: SCS_06H_100Y
------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.99 |  3.75   19.78 |  5.50    3.60
                0.50    3.60 |  2.25    8.99 |  4.00    8.99 |  5.75    3.60
                0.75    3.60 |  2.50   10.79 |  4.25    8.99 |  6.00    3.60
                1.00    5.39 |  2.75   10.79 |  4.50    7.19 |  6.25    3.60
                1.25    5.39 |  3.00   53.94 |  4.75    7.19 |
                1.50    5.39 |  3.25  140.24 |  5.00    5.39 |
                1.75    5.39 |  3.50   19.78 |  5.25    5.39 |

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------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=  30.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  55.00
------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       21.18          9.08
     Dep. Storage     (mm)=        2.00          5.00
     Average Slope     (%)=        1.00          2.00
     Length            (m)=      449.07         40.00
     Mannings n           =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
               0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
               0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
               0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
               0.417    3.60 | 2.000    8.99 | 3.583   19.78 |  5.17    5.39
               0.500    3.60 | 2.083    8.99 | 3.667   19.78 |  5.25    5.39
               0.583    3.60 | 2.167    8.99 | 3.750   19.78 |  5.33    3.60
               0.667    3.60 | 2.250    8.99 | 3.833    8.99 |  5.42    3.60
               0.750    3.60 | 2.333   10.79 | 3.917    8.99 |  5.50    3.60
               0.833    5.39 | 2.417   10.79 | 4.000    8.99 |  5.58    3.60
               0.917    5.39 | 2.500   10.79 | 4.083    8.99 |  5.67    3.60
               1.000    5.39 | 2.583   10.79 | 4.167    8.99 |  5.75    3.60
               1.083    5.39 | 2.667   10.79 | 4.250    8.99 |  5.83    3.60
               1.167    5.39 | 2.750   10.79 | 4.333    7.19 |  5.92    3.60
               1.250    5.39 | 2.833   53.94 | 4.417    7.19 |  6.00    3.60
               1.333    5.39 | 2.917   53.94 | 4.500    7.19 |  6.08    3.60
               1.417    5.39 | 3.000   53.94 | 4.583    7.19 |  6.17    3.60
               1.500    5.39 | 3.083  140.24 | 4.667    7.19 |  6.25    3.60
               1.583    5.39 | 3.167  140.24 | 4.750    7.19 |

     Max.Eff.Inten.(mm/hr)=     140.24       112.14
               over (min)          5.00         15.00
     Storage Coeff.  (min)=        5.50 (ii)    10.33 (ii)
     Unit Hyd. Tpeak (min)=        5.00         15.00
     Unit Hyd. peak  (cms)=        0.20          0.09
                                                          *TOTALS*
     PEAK FLOW       (cms)=        6.21          1.84        7.807 (iii)
     TIME TO PEAK    (hrs)=        3.25          3.33         3.25
     RUNOFF VOLUME    (mm)=       87.90         38.46        65.65
     TOTAL RAINFALL   (mm)=       89.90         89.90        89.90
     RUNOFF COEFFICIENT   =        0.98          0.43         0.73


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
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```
          THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     6.06   1.491     3.25    53.72
     + ID2= 2 (  0202):    30.25   7.807     3.25    65.65
       ================================================
       ID = 3 (  0002):    36.31   9.297     3.25    63.66

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
| Ptotal= 89.90 mm |    Comments: SCS_06H_100Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    0.00 |  2.00    8.99 |  3.75   19.78 |  5.50    3.60
                0.50    3.60 |  2.25    8.99 |  4.00    8.99 |  5.75    3.60
                0.75    3.60 |  2.50   10.79 |  4.25    8.99 |  6.00    3.60
                1.00    5.39 |  2.75   10.79 |  4.50    7.19 |  6.25    3.60
                1.25    5.39 |  3.00   53.94 |  4.75    7.19 |
                1.50    5.39 |  3.25  140.24 |  5.00    5.39 |
                1.75    5.39 |  3.50   19.78 |  5.25    5.39 |

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-------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   1.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
-------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.87         0.87
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     107.39        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
               0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
               0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
               0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
               0.417    3.60 | 2.000    8.99 | 3.583   19.78 |  5.17    5.39
               0.500    3.60 | 2.083    8.99 | 3.667   19.78 |  5.25    5.39
               0.583    3.60 | 2.167    8.99 | 3.750   19.78 |  5.33    3.60
               0.667    3.60 | 2.250    8.99 | 3.833    8.99 |  5.42    3.60
               0.750    3.60 | 2.333   10.79 | 3.917    8.99 |  5.50    3.60
               0.833    5.39 | 2.417   10.79 | 4.000    8.99 |  5.58    3.60
               0.917    5.39 | 2.500   10.79 | 4.083    8.99 |  5.67    3.60
               1.000    5.39 | 2.583   10.79 | 4.167    8.99 |  5.75    3.60
               1.083    5.39 | 2.667   10.79 | 4.250    8.99 |  5.83    3.60
               1.167    5.39 | 2.750   10.79 | 4.333    7.19 |  5.92    3.60
               1.250    5.39 | 2.833   53.94 | 4.417    7.19 |  6.00    3.60
               1.333    5.39 | 2.917   53.94 | 4.500    7.19 |  6.08    3.60
               1.417    5.39 | 3.000   53.94 | 4.583    7.19 |  6.17    3.60
               1.500    5.39 | 3.083  140.24 | 4.667    7.19 |  6.25    3.60
               1.583    5.39 | 3.167  140.24 | 4.750    7.19 |

     Max.Eff.Inten.(mm/hr)=     140.24        57.18
               over (min)        5.00        15.00
     Storage Coeff.  (min)=      2.33 (ii)   11.16 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.30         0.09
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.34         0.08         0.408 (iii)
     TIME TO PEAK    (hrs)=      3.25         3.33          3.25
     RUNOFF VOLUME    (mm)=     87.90        29.15         58.52
     TOTAL RAINFALL   (mm)=     89.90        89.90         89.90
     RUNOFF COEFFICIENT   =      0.98         0.32          0.65

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0002):    36.31   9.297     3.25    63.66
     + ID2= 2 (  0203):     1.73   0.408     3.25    58.52
       ================================================
       ID = 3 (  0003):    38.04   9.706     3.25    63.43

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| RESERVOIR(  0004)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |   0.6590      1.1752
                         0.0390     0.3192   |   0.9040      1.3822
                         0.0470     0.4662   |   1.0480      1.6005
                         0.0510     0.5443   |   1.1130      1.7139
                         0.0860     0.6254   |   3.0220      1.8301
                         0.2250     0.7966   |  10.8910      2.0711
                         0.4210     0.9799   |  22.0560      2.3233

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
     INFLOW : ID= 2 (  0003)    38.042     9.706      3.25      63.43
     OUTFLOW: ID= 1 (  0004)    38.042     1.088      3.92      63.37

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.21
                    TIME SHIFT OF PEAK FLOW         (min)= 40.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  1.6718

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
| Ptotal= 89.90 mm |    Comments: SCS_06H_100Y
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	8.99	3.75	19.78	5.50	3.60
0.50	3.60	2.25	8.99	4.00	8.99	5.75	3.60
0.75	3.60	2.50	10.79	4.25	8.99	6.00	3.60
1.00	5.39	2.75	10.79	4.50	7.19	6.25	3.60
1.25	5.39	3.00	53.94	4.75	7.19		
1.50	5.39	3.25	140.24	5.00	5.39		
1.75	5.39	3.50	19.78	5.25	5.39		

CALIB			
NASHYD (0207)	Area (ha)= 12.81	Curve Number (CN)= 61.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.50	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 1.16		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	5.39	3.250	140.24	4.83	5.39
0.167	0.00	1.750	5.39	3.333	19.78	4.92	5.39
0.250	0.00	1.833	8.99	3.417	19.78	5.00	5.39
0.333	3.60	1.917	8.99	3.500	19.78	5.08	5.39
0.417	3.60	2.000	8.99	3.583	19.78	5.17	5.39
0.500	3.60	2.083	8.99	3.667	19.78	5.25	5.39
0.583	3.60	2.167	8.99	3.750	19.78	5.33	3.60
0.667	3.60	2.250	8.99	3.833	8.99	5.42	3.60
0.750	3.60	2.333	10.79	3.917	8.99	5.50	3.60
0.833	5.39	2.417	10.79	4.000	8.99	5.58	3.60
0.917	5.39	2.500	10.79	4.083	8.99	5.67	3.60
1.000	5.39	2.583	10.79	4.167	8.99	5.75	3.60
1.083	5.39	2.667	10.79	4.250	8.99	5.83	3.60
1.167	5.39	2.750	10.79	4.333	7.19	5.92	3.60
1.250	5.39	2.833	53.94	4.417	7.19	6.00	3.60
1.333	5.39	2.917	53.94	4.500	7.19	6.08	3.60
1.417	5.39	3.000	53.94	4.583	7.19	6.17	3.60
1.500	5.39	3.083	140.24	4.667	7.19	6.25	3.60
1.583	5.39	3.167	140.24	4.750	7.19		

Unit Hyd Qpeak (cms)= 0.422

PEAK FLOW (cms)= 0.354 (i)
TIME TO PEAK (hrs)= 4.500
RUNOFF VOLUME (mm)= 28.863
TOTAL RAINFALL (mm)= 89.900
RUNOFF COEFFICIENT = 0.321

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
Ptotal= 89.90 mm	Comments: SCS_06H_100Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	2.00	8.99	3.75	19.78	5.50	3.60
0.50	3.60	2.25	8.99	4.00	8.99	5.75	3.60
0.75	3.60	2.50	10.79	4.25	8.99	6.00	3.60
1.00	5.39	2.75	10.79	4.50	7.19	6.25	3.60
1.25	5.39	3.00	53.94	4.75	7.19		
1.50	5.39	3.25	140.24	5.00	5.39		
1.75	5.39	3.50	19.78	5.25	5.39		

CALIB			
STANDHYD (0204)	Area (ha)= 0.92		
ID= 1 DT= 5.0 min	Total Imp(%)= 60.00	Dir. Conn.(%)= 45.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.37
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	78.32	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	5.39	3.250	140.24	4.83	5.39
0.167	0.00	1.750	5.39	3.333	19.78	4.92	5.39
0.250	0.00	1.833	8.99	3.417	19.78	5.00	5.39
0.333	3.60	1.917	8.99	3.500	19.78	5.08	5.39
0.417	3.60	2.000	8.99	3.583	19.78	5.17	5.39
0.500	3.60	2.083	8.99	3.667	19.78	5.25	5.39
0.583	3.60	2.167	8.99	3.750	19.78	5.33	3.60
0.667	3.60	2.250	8.99	3.833	8.99	5.42	3.60
0.750	3.60	2.333	10.79	3.917	8.99	5.50	3.60
0.833	5.39	2.417	10.79	4.000	8.99	5.58	3.60
0.917	5.39	2.500	10.79	4.083	8.99	5.67	3.60
1.000	5.39	2.583	10.79	4.167	8.99	5.75	3.60
1.083	5.39	2.667	10.79	4.250	8.99	5.83	3.60
1.167	5.39	2.750	10.79	4.333	7.19	5.92	3.60
1.250	5.39	2.833	53.94	4.417	7.19	6.00	3.60
1.333	5.39	2.917	53.94	4.500	7.19	6.08	3.60
1.417	5.39	3.000	53.94	4.583	7.19	6.17	3.60
1.500	5.39	3.083	140.24	4.667	7.19	6.25	3.60
1.583	5.39	3.167	140.24	4.750	7.19		

			TOTALS
Max.Eff.Inten.(mm/hr)=	140.24	97.53	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.93 (ii)	9.06 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
PEAK FLOW (cms)=	0.16	0.07	0.233 (iii)
TIME TO PEAK (hrs)=	3.25	3.25	3.25
RUNOFF VOLUME (mm)=	87.90	36.41	59.58
TOTAL RAINFALL (mm)=	89.90	89.90	89.90
RUNOFF COEFFICIENT =	0.98	0.41	0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\33e70cb9
Ptotal= 89.90 mm	Comments: SCS_06H_100Y

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr

```
               0.25    0.00 |  2.00    8.99 |  3.75   19.78 |  5.50    3.60
               0.50    3.60 |  2.25    8.99 |  4.00    8.99 |  5.75    3.60
               0.75    3.60 |  2.50   10.79 |  4.25    8.99 |  6.00    3.60
               1.00    5.39 |  2.75   10.79 |  4.50    7.19 |  6.25    3.60
               1.25    5.39 |  3.00   53.94 |  4.75    7.19 |
               1.50    5.39 |  3.25  140.24 |  5.00    5.39 |
               1.75    5.39 |  3.50   19.78 |  5.25    5.39 |

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| CALIB           |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
-------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.58         0.39
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     80.42        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.00 | 1.667    5.39 | 3.250  140.24 |  4.83    5.39
              0.167    0.00 | 1.750    5.39 | 3.333   19.78 |  4.92    5.39
              0.250    0.00 | 1.833    8.99 | 3.417   19.78 |  5.00    5.39
              0.333    3.60 | 1.917    8.99 | 3.500   19.78 |  5.08    5.39
              0.417    3.60 | 2.000    8.99 | 3.583   19.78 |  5.17    5.39
              0.500    3.60 | 2.083    8.99 | 3.667   19.78 |  5.25    5.39
              0.583    3.60 | 2.167    8.99 | 3.750   19.78 |  5.33    3.60
              0.667    3.60 | 2.250    8.99 | 3.833    8.99 |  5.42    3.60
              0.750    3.60 | 2.333   10.79 | 3.917    8.99 |  5.50    3.60
              0.833    5.39 | 2.417   10.79 | 4.000    8.99 |  5.58    3.60
              0.917    5.39 | 2.500   10.79 | 4.083    8.99 |  5.67    3.60
              1.000    5.39 | 2.583   10.79 | 4.167    8.99 |  5.75    3.60
              1.083    5.39 | 2.667   10.79 | 4.250    8.99 |  5.83    3.60
              1.167    5.39 | 2.750   10.79 | 4.333    7.19 |  5.92    3.60
              1.250    5.39 | 2.833   53.94 | 4.417    7.19 |  6.00    3.60
              1.333    5.39 | 2.917   53.94 | 4.500    7.19 |  6.08    3.60
              1.417    5.39 | 3.000   53.94 | 4.583    7.19 |  6.17    3.60
              1.500    5.39 | 3.083  140.24 | 4.667    7.19 |  6.25    3.60
              1.583    5.39 | 3.167  140.24 | 4.750    7.19 |

     Max.Eff.Inten.(mm/hr)=     140.24       97.53
               over (min)        5.00       10.00
     Storage Coeff.  (min)=      1.96 (ii)    9.09 (ii)
     Unit Hyd. Tpeak (min)=      5.00       10.00
     Unit Hyd. peak  (cms)=      0.31        0.12
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.17        0.08         0.245 (iii)
     TIME TO PEAK    (hrs)=      3.25        3.25          3.25
     RUNOFF VOLUME    (mm)=     87.90       36.41         59.58
     TOTAL RAINFALL   (mm)=     89.90       89.90         89.90
     RUNOFF COEFFICIENT   =      0.98        0.41          0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.92   0.233     3.25    59.58
     + ID2= 2 (  0205):     0.97   0.245     3.25    59.58
       ================================================
       ID = 3 (  0005):     1.89   0.478     3.25    59.58

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0005):     1.89   0.478     3.25    59.58
     + ID2= 2 (  0207):    12.81   0.354     4.50    28.86
       ================================================
       ID = 1 (  0005):    14.70   0.532     3.25    32.81

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):    14.70   0.532     3.25    32.81
     + ID2= 2 (  0004):    38.04   1.088     3.92    63.37
       ================================================
       ID = 3 (  0005):    52.74   1.461     4.25    54.86

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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      V    V   I    SSSSS  U   U    A    L             (v 5.1.2000)
      V    V   I    SS     U   U   A A   L
       V  V    I      SS   U   U  AAAAA  L
       V  V    I       SS  U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\7a24d8fa-8f00-4279-8713-c08600f7de4a\scena
  Summary filename: C:\Users\Valdor\AppData\Local\Civica\VH5\c7e9b9dc-2878-4b8a-9d26-
5e475049aa89\7a24d8fa-8f00-4279-8713-c08600f7de4a\scena
```

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DATE: 03-13-2019                          TIME: 02:36:06

USER:


COMMENTS: _____________________________________________________

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  ************************************************
  ** SIMULATION : Timmins                       **
  ************************************************


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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
| Ptotal=193.00 mm |    Comments: * Timmins Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
                0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
                0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
                1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
                1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
                1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
                1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
                2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
                2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
                2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
                2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
                3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

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| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   0.59   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.19

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083   15.00 | 3.083    3.00 | 6.083   43.00 |  9.08   13.00
               0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
               0.250   15.00 | 3.250    3.00 | 6.250   43.00 |  9.25   13.00
               0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
               0.417   15.00 | 3.417    3.00 | 6.417   43.00 |  9.42   13.00
               0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
               0.583   15.00 | 3.583    3.00 | 6.583   43.00 |  9.58   13.00
               0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
               0.750   15.00 | 3.750    3.00 | 6.750   43.00 |  9.75   13.00
               0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
               0.917   15.00 | 3.917    3.00 | 6.917   43.00 |  9.92   13.00
               1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
               1.083   20.00 | 4.083    5.00 | 7.083   20.00 | 10.08   13.00
               1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
               1.250   20.00 | 4.250    5.00 | 7.250   20.00 | 10.25   13.00
               1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
               1.417   20.00 | 4.417    5.00 | 7.417   20.00 | 10.42   13.00
               1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
               1.583   20.00 | 4.583    5.00 | 7.583   20.00 | 10.58   13.00
               1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
               1.750   20.00 | 4.750    5.00 | 7.750   20.00 | 10.75   13.00
               1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
               1.917   20.00 | 4.917    5.00 | 7.917   20.00 | 10.92   13.00
               2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
               2.083   10.00 | 5.083   20.00 | 8.083   23.00 | 11.08    8.00
               2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
               2.250   10.00 | 5.250   20.00 | 8.250   23.00 | 11.25    8.00
               2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
               2.417   10.00 | 5.417   20.00 | 8.417   23.00 | 11.42    8.00
               2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
               2.583   10.00 | 5.583   20.00 | 8.583   23.00 | 11.58    8.00
               2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
               2.750   10.00 | 5.750   20.00 | 8.750   23.00 | 11.75    8.00
               2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
               2.917   10.00 | 5.917   20.00 | 8.917   23.00 | 11.92    8.00
               3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

     Unit Hyd Qpeak  (cms)=   0.119

     PEAK FLOW       (cms)=   0.043 (i)
     TIME TO PEAK    (hrs)=   7.000
     RUNOFF VOLUME    (mm)= 100.634
     TOTAL RAINFALL   (mm)= 193.000
     RUNOFF COEFFICIENT   =   0.521

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
| Ptotal=193.00 mm |    Comments: * Timmins Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
                0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
                0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
                1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
                1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
                1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
                1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
                2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
                2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
                2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
                2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
                3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

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| CALIB            |
| STANDHYD (  0101)|   Area    (ha)=   2.11
|ID= 1 DT= 5.0 min |   Total Imp(%)=  25.00   Dir. Conn.(%)=  15.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.53         1.58
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     118.60        40.00
     Mannings n            =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Max.Eff.Inten.(mm/hr)=	43.00	32.65	
over (min)	5.00	20.00	
Storage Coeff. (min)=	3.97 (ii)	15.01 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.24	0.07	
			TOTALS
PEAK FLOW (cms)=	0.04	0.13	0.172 (iii)
TIME TO PEAK (hrs)=	6.92	7.00	7.00
RUNOFF VOLUME (mm)=	191.00	107.16	119.74
TOTAL RAINFALL (mm)=	193.00	193.00	193.00
RUNOFF COEFFICIENT =	0.99	0.56	0.62

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM
Ptotal=193.00 mm

Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

CALIB
STANDHYD (0102)
ID= 1 DT= 5.0 min

Area (ha)= 0.23
Total Imp(%)= 35.00 Dir. Conn.(%)= 25.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.08	0.15
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	39.16	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

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     Max.Eff.Inten.(mm/hr)=      43.00        33.50
               over (min)        5.00        15.00
     Storage Coeff.  (min)=      2.04 (ii)   12.97 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.31         0.08
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.01         0.01          0.020 (iii)
     TIME TO PEAK    (hrs)=      6.50         7.00          7.00
     RUNOFF VOLUME    (mm)=    191.00       108.06        128.76
     TOTAL RAINFALL   (mm)=    193.00       193.00        193.00
     RUNOFF COEFFICIENT   =      0.99         0.56          0.67

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
| Ptotal=193.00 mm |    Comments: * Timmins Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
                0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
                0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
                1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
                1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
                1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
                1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
                2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
                2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
                2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
                2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
                3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

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| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   2.84
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  60.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.13         0.71
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     137.60        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083   15.00 | 3.083    3.00 | 6.083   43.00 |  9.08   13.00
               0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
               0.250   15.00 | 3.250    3.00 | 6.250   43.00 |  9.25   13.00
               0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
               0.417   15.00 | 3.417    3.00 | 6.417   43.00 |  9.42   13.00
               0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
               0.583   15.00 | 3.583    3.00 | 6.583   43.00 |  9.58   13.00
               0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
               0.750   15.00 | 3.750    3.00 | 6.750   43.00 |  9.75   13.00
               0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
               0.917   15.00 | 3.917    3.00 | 6.917   43.00 |  9.92   13.00
               1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
               1.083   20.00 | 4.083    5.00 | 7.083   20.00 | 10.08   13.00
               1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
               1.250   20.00 | 4.250    5.00 | 7.250   20.00 | 10.25   13.00
               1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
               1.417   20.00 | 4.417    5.00 | 7.417   20.00 | 10.42   13.00
               1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
               1.583   20.00 | 4.583    5.00 | 7.583   20.00 | 10.58   13.00
               1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
               1.750   20.00 | 4.750    5.00 | 7.750   20.00 | 10.75   13.00
               1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
               1.917   20.00 | 4.917    5.00 | 7.917   20.00 | 10.92   13.00
               2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
               2.083   10.00 | 5.083   20.00 | 8.083   23.00 | 11.08    8.00
               2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
               2.250   10.00 | 5.250   20.00 | 8.250   23.00 | 11.25    8.00
               2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
               2.417   10.00 | 5.417   20.00 | 8.417   23.00 | 11.42    8.00
               2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
               2.583   10.00 | 5.583   20.00 | 8.583   23.00 | 11.58    8.00
               2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
               2.750   10.00 | 5.750   20.00 | 8.750   23.00 | 11.75    8.00
               2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
               2.917   10.00 | 5.917   20.00 | 8.917   23.00 | 11.92    8.00
               3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

     Max.Eff.Inten.(mm/hr)=      43.00        52.84
               over (min)        5.00        15.00
     Storage Coeff.  (min)=      4.34 (ii)   13.45 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.23         0.08
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.20         0.10          0.303 (iii)
     TIME TO PEAK    (hrs)=      6.92         7.00          7.00
     RUNOFF VOLUME    (mm)=    191.00       123.73        164.09
     TOTAL RAINFALL   (mm)=    193.00       193.00        193.00
     RUNOFF COEFFICIENT   =      0.99         0.64          0.85

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
| Ptotal=193.00 mm |    Comments: * Timmins Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
                0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
                0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
                1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
                1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
                1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
                1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
                2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
                2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
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              2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
              2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
              3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

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| CALIB            |
| STANDHYD (  0208)|   Area    (ha)=   1.78
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  40.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.16         0.62
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     108.93        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083   15.00 | 3.083    3.00 | 6.083   43.00 |  9.08   13.00
             0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
             0.250   15.00 | 3.250    3.00 | 6.250   43.00 |  9.25   13.00
             0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
             0.417   15.00 | 3.417    3.00 | 6.417   43.00 |  9.42   13.00
             0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
             0.583   15.00 | 3.583    3.00 | 6.583   43.00 |  9.58   13.00
             0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
             0.750   15.00 | 3.750    3.00 | 6.750   43.00 |  9.75   13.00
             0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
             0.917   15.00 | 3.917    3.00 | 6.917   43.00 |  9.92   13.00
             1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
             1.083   20.00 | 4.083    5.00 | 7.083   20.00 | 10.08   13.00
             1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
             1.250   20.00 | 4.250    5.00 | 7.250   20.00 | 10.25   13.00
             1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
             1.417   20.00 | 4.417    5.00 | 7.417   20.00 | 10.42   13.00
             1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
             1.583   20.00 | 4.583    5.00 | 7.583   20.00 | 10.58   13.00
             1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
             1.750   20.00 | 4.750    5.00 | 7.750   20.00 | 10.75   13.00
             1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
             1.917   20.00 | 4.917    5.00 | 7.917   20.00 | 10.92   13.00
             2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
             2.083   10.00 | 5.083   20.00 | 8.083   23.00 | 11.08    8.00
             2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
             2.250   10.00 | 5.250   20.00 | 8.250   23.00 | 11.25    8.00
             2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
             2.417   10.00 | 5.417   20.00 | 8.417   23.00 | 11.42    8.00
             2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
             2.583   10.00 | 5.583   20.00 | 8.583   23.00 | 11.58    8.00
             2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
             2.750   10.00 | 5.750   20.00 | 8.750   23.00 | 11.75    8.00
             2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
             2.917   10.00 | 5.917   20.00 | 8.917   23.00 | 11.92    8.00
             3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

     Max.Eff.Inten.(mm/hr)=      43.00        57.85
                 over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.77 (ii)   12.55 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.25         0.08
                                                  *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.10          0.182 (iii)
     TIME TO PEAK    (hrs)=       6.92         7.00            7.00
     RUNOFF VOLUME    (mm)=     191.00       126.86          152.51
     TOTAL RAINFALL   (mm)=     193.00       193.00          193.00
     RUNOFF COEFFICIENT   =       0.99         0.66            0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| DUHYD    (  0006)|
| Inlet Cap.= 0.211|
| #of Inlets=     1|
| Total(cms)=   0.2|      AREA     QPEAK     TPEAK    R.V.
--------------------      (ha)     (cms)     (hrs)    (mm)
     TOTAL HYD.(ID= 1):   1.78      0.18      7.00  152.51
     ==================================================
     MAJOR SYS.(ID= 2):   0.00      0.00      0.00    0.00
     MINOR SYS.(ID= 3):   1.78      0.18      7.00  152.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------


--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     2.11   0.172     7.00   119.74
     + ID2= 2 (  0102):     0.23   0.020     7.00   128.76
       ================================================
       ID = 3 (  0001):     2.34   0.192     7.00   120.62

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0001):     2.34   0.192     7.00   120.62
     + ID2= 2 (  0105):     0.59   0.043     7.00   100.63
       ================================================
       ID = 1 (  0001):     2.93   0.235     7.00   116.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     2.93   0.235     7.00   116.60
     + ID2= 2 (  0201):     2.84   0.303     7.00   164.09
       ================================================
       ID = 3 (  0001):     5.77   0.539     7.00   139.97

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
```

```
*** W A R N I N G :  HYDROGRAPH   0006 <ID= 2> IS DRY.
*** W A R N I N G :  HYDROGRAPH   0001 = HYDROGRAPH 0003
        ID1= 3 (  0001):     5.77   0.539     7.00   139.97
      + ID2= 2 (  0006):     0.00   0.000     0.00     0.00
        ====================================================
        ID = 1 (  0001):     5.77   0.539     7.00   139.97

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
Ptotal=193.00 mm	Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

CALIB	
STANDHYD (0202)	Area (ha)= 30.25
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00 Dir. Conn.(%)= 55.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	21.18	9.08
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	449.07	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

			TOTALS
Max.Eff.Inten.(mm/hr)=	43.00	48.49	
over (min)	10.00	20.00	
Storage Coeff. (min)=	8.82 (ii)	18.24 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.12	0.06	
PEAK FLOW (cms)=	1.99	1.12	3.106 (iii)
TIME TO PEAK (hrs)=	7.00	7.00	7.00
RUNOFF VOLUME (mm)=	191.00	120.74	159.38
TOTAL RAINFALL (mm)=	193.00	193.00	193.00
RUNOFF COEFFICIENT =	0.99	0.63	0.83

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0002)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0001):	5.77	0.539	7.00	139.97
	+ ID2= 2 (0202):	30.25	3.106	7.00	159.38
	ID = 3 (0002):	36.02	3.644	7.00	156.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\Valdor\AppData\Local\Temp\287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
Ptotal=193.00 mm	Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00

2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

CALIB		
STANDHYD (0203)	Area (ha)=	1.73
ID= 1 DT= 5.0 min	Total Imp(%)=	50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.87	0.87
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	107.39	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Max.Eff.Inten.(mm/hr)=		43.00	27.21	
over (min)		5.00	20.00	
Storage Coeff. (min)=		3.74 (ii)	15.62 (ii)	
Unit Hyd. Tpeak (min)=		5.00	20.00	
Unit Hyd. peak (cms)=		0.25	0.07	
				TOTALS
PEAK FLOW	(cms)=	0.10	0.06	0.164 (iii)
TIME TO PEAK	(hrs)=	6.92	7.00	7.00
RUNOFF VOLUME	(mm)=	191.00	100.87	145.93
TOTAL RAINFALL	(mm)=	193.00	193.00	193.00
RUNOFF COEFFICIENT	=	0.99	0.52	0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 61.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0002):	36.02	3.644	7.00	156.28
	+ ID2= 2 (0203):	1.73	0.164	7.00	145.93
	ID = 3 (0003):	37.75	3.808	7.00	155.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0004)					
IN= 2---> OUT= 1					
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	0.6590	1.1752	
	0.0390	0.3192	0.9040	1.3822	
	0.0470	0.4662	1.0480	1.6005	
	0.0510	0.5443	1.1130	1.7139	
	0.0860	0.6254	3.0220	1.8301	
	0.2250	0.7966	10.8910	2.0711	
	0.4210	0.9799	22.0560	2.3233	

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0003)		37.750	3.808	7.00	155.80
OUTFLOW: ID= 1 (0004)		37.750	3.602	7.08	155.75
PEAK FLOW REDUCTION [Qout/Qin](%)=		94.59			
TIME SHIFT OF PEAK FLOW	(min)=	5.00			
MAXIMUM STORAGE USED	(ha.m.)=	1.8498			

READ STORM	Filename: C:\Users\Valdor\AppD ata\Local\Temp\ 287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
Ptotal=193.00 mm	Comments: * Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	15.00	3.25	3.00	6.25	43.00	9.25	13.00
0.50	15.00	3.50	3.00	6.50	43.00	9.50	13.00
0.75	15.00	3.75	3.00	6.75	43.00	9.75	13.00
1.00	15.00	4.00	3.00	7.00	43.00	10.00	13.00
1.25	20.00	4.25	5.00	7.25	20.00	10.25	13.00
1.50	20.00	4.50	5.00	7.50	20.00	10.50	13.00
1.75	20.00	4.75	5.00	7.75	20.00	10.75	13.00
2.00	20.00	5.00	5.00	8.00	20.00	11.00	13.00
2.25	10.00	5.25	20.00	8.25	23.00	11.25	8.00
2.50	10.00	5.50	20.00	8.50	23.00	11.50	8.00
2.75	10.00	5.75	20.00	8.75	23.00	11.75	8.00
3.00	10.00	6.00	20.00	9.00	23.00	12.00	8.00

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| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=  12.81   Curve Number   (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   1.16

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083   15.00 | 3.083    3.00 | 6.083   43.00 |  9.08   13.00
               0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
               0.250   15.00 | 3.250    3.00 | 6.250   43.00 |  9.25   13.00
               0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
               0.417   15.00 | 3.417    3.00 | 6.417   43.00 |  9.42   13.00
               0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
               0.583   15.00 | 3.583    3.00 | 6.583   43.00 |  9.58   13.00
               0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
               0.750   15.00 | 3.750    3.00 | 6.750   43.00 |  9.75   13.00
               0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
               0.917   15.00 | 3.917    3.00 | 6.917   43.00 |  9.92   13.00
               1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
               1.083   20.00 | 4.083    5.00 | 7.083   20.00 | 10.08   13.00
               1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
               1.250   20.00 | 4.250    5.00 | 7.250   20.00 | 10.25   13.00
               1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
               1.417   20.00 | 4.417    5.00 | 7.417   20.00 | 10.42   13.00
               1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
               1.583   20.00 | 4.583    5.00 | 7.583   20.00 | 10.58   13.00
               1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
               1.750   20.00 | 4.750    5.00 | 7.750   20.00 | 10.75   13.00
               1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
               1.917   20.00 | 4.917    5.00 | 7.917   20.00 | 10.92   13.00
               2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
               2.083   10.00 | 5.083   20.00 | 8.083   23.00 | 11.08    8.00
               2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
               2.250   10.00 | 5.250   20.00 | 8.250   23.00 | 11.25    8.00
               2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
               2.417   10.00 | 5.417   20.00 | 8.417   23.00 | 11.42    8.00
               2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
               2.583   10.00 | 5.583   20.00 | 8.583   23.00 | 11.58    8.00
               2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
               2.750   10.00 | 5.750   20.00 | 8.750   23.00 | 11.75    8.00
               2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
               2.917   10.00 | 5.917   20.00 | 8.917   23.00 | 11.92    8.00
               3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

    Unit Hyd Qpeak  (cms)=   0.422

    PEAK FLOW       (cms)=   0.576 (i)
    TIME TO PEAK    (hrs)=   8.250
    RUNOFF VOLUME    (mm)= 100.477
    TOTAL RAINFALL   (mm)= 193.000
    RUNOFF COEFFICIENT   =   0.521

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
| Ptotal=193.00 mm |    Comments: * Timmins Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.25    15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
               0.50    15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
               0.75    15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
               1.00    15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
               1.25    20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
               1.50    20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
               1.75    20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
               2.00    20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
               2.25    10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
               2.50    10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
               2.75    10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
               3.00    10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55          0.37
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      78.32         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083   15.00 | 3.083    3.00 | 6.083   43.00 |  9.08   13.00
               0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
               0.250   15.00 | 3.250    3.00 | 6.250   43.00 |  9.25   13.00
               0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
               0.417   15.00 | 3.417    3.00 | 6.417   43.00 |  9.42   13.00
               0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
               0.583   15.00 | 3.583    3.00 | 6.583   43.00 |  9.58   13.00
               0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
               0.750   15.00 | 3.750    3.00 | 6.750   43.00 |  9.75   13.00
               0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
               0.917   15.00 | 3.917    3.00 | 6.917   43.00 |  9.92   13.00
               1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
               1.083   20.00 | 4.083    5.00 | 7.083   20.00 | 10.08   13.00
               1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
               1.250   20.00 | 4.250    5.00 | 7.250   20.00 | 10.25   13.00
               1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
               1.417   20.00 | 4.417    5.00 | 7.417   20.00 | 10.42   13.00
               1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
               1.583   20.00 | 4.583    5.00 | 7.583   20.00 | 10.58   13.00
               1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
               1.750   20.00 | 4.750    5.00 | 7.750   20.00 | 10.75   13.00
               1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
               1.917   20.00 | 4.917    5.00 | 7.917   20.00 | 10.92   13.00
               2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
               2.083   10.00 | 5.083   20.00 | 8.083   23.00 | 11.08    8.00
               2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
               2.250   10.00 | 5.250   20.00 | 8.250   23.00 | 11.25    8.00
               2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
               2.417   10.00 | 5.417   20.00 | 8.417   23.00 | 11.42    8.00
               2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
               2.583   10.00 | 5.583   20.00 | 8.583   23.00 | 11.58    8.00
               2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
               2.750   10.00 | 5.750   20.00 | 8.750   23.00 | 11.75    8.00
               2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
               2.917   10.00 | 5.917   20.00 | 8.917   23.00 | 11.92    8.00
               3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00
```

```
     Max.Eff.Inten.(mm/hr)=      43.00        43.10
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.09 (ii)   12.97 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.27         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.05         0.04          0.092 (iii)
     TIME TO PEAK    (hrs)=       6.75         7.00          7.00
     RUNOFF VOLUME    (mm)=     191.00       116.63        150.09
     TOTAL RAINFALL   (mm)=     193.00       193.00        193.00
     RUNOFF COEFFICIENT   =       0.99         0.60          0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\Valdor\AppD
|                  |              ata\Local\Temp\
|                  |              287a522d-7bd0-4c85-8b5f-ed45f62f486a\50758f93
| Ptotal=193.00 mm |    Comments: * Timmins Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25   15.00 |  3.25    3.00 |  6.25   43.00 |  9.25   13.00
                0.50   15.00 |  3.50    3.00 |  6.50   43.00 |  9.50   13.00
                0.75   15.00 |  3.75    3.00 |  6.75   43.00 |  9.75   13.00
                1.00   15.00 |  4.00    3.00 |  7.00   43.00 | 10.00   13.00
                1.25   20.00 |  4.25    5.00 |  7.25   20.00 | 10.25   13.00
                1.50   20.00 |  4.50    5.00 |  7.50   20.00 | 10.50   13.00
                1.75   20.00 |  4.75    5.00 |  7.75   20.00 | 10.75   13.00
                2.00   20.00 |  5.00    5.00 |  8.00   20.00 | 11.00   13.00
                2.25   10.00 |  5.25   20.00 |  8.25   23.00 | 11.25    8.00
                2.50   10.00 |  5.50   20.00 |  8.50   23.00 | 11.50    8.00
                2.75   10.00 |  5.75   20.00 |  8.75   23.00 | 11.75    8.00
                3.00   10.00 |  6.00   20.00 |  9.00   23.00 | 12.00    8.00

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   0.97
|ID= 1 DT= 5.0 min |   Total Imp(%)=  60.00   Dir. Conn.(%)=  45.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.58         0.39
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      80.42        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083   15.00 | 3.083    3.00 | 6.083   43.00 |  9.08   13.00
               0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
               0.250   15.00 | 3.250    3.00 | 6.250   43.00 |  9.25   13.00
               0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
               0.417   15.00 | 3.417    3.00 | 6.417   43.00 |  9.42   13.00
               0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
               0.583   15.00 | 3.583    3.00 | 6.583   43.00 |  9.58   13.00
               0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
               0.750   15.00 | 3.750    3.00 | 6.750   43.00 |  9.75   13.00
               0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
               0.917   15.00 | 3.917    3.00 | 6.917   43.00 |  9.92   13.00
               1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
               1.083   20.00 | 4.083    5.00 | 7.083   20.00 | 10.08   13.00
               1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
               1.250   20.00 | 4.250    5.00 | 7.250   20.00 | 10.25   13.00
               1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
               1.417   20.00 | 4.417    5.00 | 7.417   20.00 | 10.42   13.00
               1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
               1.583   20.00 | 4.583    5.00 | 7.583   20.00 | 10.58   13.00
               1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
               1.750   20.00 | 4.750    5.00 | 7.750   20.00 | 10.75   13.00
               1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
               1.917   20.00 | 4.917    5.00 | 7.917   20.00 | 10.92   13.00
               2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
               2.083   10.00 | 5.083   20.00 | 8.083   23.00 | 11.08    8.00
               2.167   10.00 | 5.167   20.00 | 8.167   23.00 | 11.17    8.00
               2.250   10.00 | 5.250   20.00 | 8.250   23.00 | 11.25    8.00
               2.333   10.00 | 5.333   20.00 | 8.333   23.00 | 11.33    8.00
               2.417   10.00 | 5.417   20.00 | 8.417   23.00 | 11.42    8.00
               2.500   10.00 | 5.500   20.00 | 8.500   23.00 | 11.50    8.00
               2.583   10.00 | 5.583   20.00 | 8.583   23.00 | 11.58    8.00
               2.667   10.00 | 5.667   20.00 | 8.667   23.00 | 11.67    8.00
               2.750   10.00 | 5.750   20.00 | 8.750   23.00 | 11.75    8.00
               2.833   10.00 | 5.833   20.00 | 8.833   23.00 | 11.83    8.00
               2.917   10.00 | 5.917   20.00 | 8.917   23.00 | 11.92    8.00
               3.000   10.00 | 6.000   20.00 | 9.000   23.00 | 12.00    8.00

     Max.Eff.Inten.(mm/hr)=      43.00        43.10
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.14 (ii)   13.02 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.27         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.05         0.04          0.097 (iii)
     TIME TO PEAK    (hrs)=       6.75         7.00          7.00
     RUNOFF VOLUME    (mm)=     191.00       116.63        150.09
     TOTAL RAINFALL   (mm)=     193.00       193.00        193.00
     RUNOFF COEFFICIENT   =       0.99         0.60          0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.92   0.092     7.00   150.09
      + ID2= 2 (  0205):     0.97   0.097     7.00   150.09
        ================================================
        ID = 3 (  0005):     1.89   0.188     7.00   150.09

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
```

```
        ID1= 3 (  0005):     1.89   0.188     7.00   150.09
      + ID2= 2 (  0207):    12.81   0.576     8.25   100.48
        ==================================================
        ID = 1 (  0005):    14.70   0.680     8.42   106.85

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0005):    14.70   0.680     8.42   106.85
      + ID2= 2 (  0004):    37.75   3.602     7.08   155.75
        ==================================================
        ID = 3 (  0005):    52.45   4.158     7.08   142.04

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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APPENDIX "F"

Site Water Balance Calculations

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: March 2019

Table F.1: Site Water Balance Calculations (Annual)

Condition	Site Area (ha)	Water Balance Components	Pervious Area Without Infiltration BMPs	Impervious Area Without Infiltration BMPs	Impervious Area With Basic Infiltration BMPs	TOTAL SITE VOLUMES Precipitation (m^3)	Evapotranspiration (m^3)	Surplus (m^3)	Runoff (m^3)	Infiltration (m^3)	Percent of Existing Infiltration (%)
Existing	**47.77**	Area (ha)	47.77	0.00	0.00	408,577	277,722	143,480	70,305	73,175	100.0
		HSG	B	n/a	B						
		Weighted WHC (mm)	150	n/a	150						
		Infiltration Factor	0.510	0.00	0.454						
		Precipitation (mm)	855.3	855.3	855.3						
		Evapotranspiration (mm)	581.4	0.0	581.4						
		Surplus (mm)	300.4	855.3	300.4						
		Infiltration (mm)	153.2	0.0	136.4						
		Runoff (mm)	147.2	855.3	163.9						
Proposed (No Infiltration BMPs)	**47.77**	Area (ha)	23.30	24.47	0.00	408,577	129,683	285,291	241,601	43,690	59.7
		HSG	B	n/a	B						
		Weighted WHC (mm)	104	n/a	104						
		Infiltration Factor	0.575	0.00	0.454						
		Precipitation (mm)	855.3	855.3	855.3						
		Evapotranspiration (mm)	556.6	0.0	556.6						
		Surplus (mm)	326.1	855.3	326.1						
		Infiltration (mm)	187.5	0.0	148.1						
		Runoff (mm)	138.6	855.3	178.0						
Proposed (With Basic Infiltration BMPs)	**47.77**	Area (ha)	23.30	19.07	5.40	408,577	159,741	256,716	205,026	51,689	70.6
		HSG	B	n/a	B						
		Weighted WHC (mm)	104	n/a	104						
		Infiltration Factor	0.575	0.00	0.454						
		Precipitation (mm)	855.3	855.3	855.3						
		Evapotranspiration (mm)	556.6	0.0	556.6						
		Surplus (mm)	326.1	855.3	326.1						
		Infiltration (mm)	187.5	0.0	148.1						
		Runoff (mm)	138.6	855.3	178.0						
Proposed (With Enhanced Infiltration BMP's)	**47.77**		**See Table D.6**						**51689 + 21872 =**	73,562	100.5

Notes:

1. Site water balance calculations based on methodology per the **Stormwater Management Planning and Design Manual** (MOE, March 2003).
2. Basic Infiltration BMPs consist of roof runoff directed to pervious areas (single detached roof areas were assumed to be $150m^2$).
3. Enhanced Infiltration BMPs consist of roof runoff from proposed buildings directed to infiltration trenches.

VALDOR ENGINEERING INC.
Project: Millbrook Subdivision, Phase 2
File: 17125
Date: March 2019

Table F.2: Water Holding Capacity (WHC) Calculations

Per MOE Methodology (SWM Planning & Design Manual, MOE, March 2003)

Existing Conditions (Pervious Area)			
Land Use	**Area (ha)**	**HSG**	**WHC**
Pasture and Shrubs	5.65	B	150
Moderately Rooted Crops	42.12	B	150
Total (Area-Weighted):	47.77		**150**

Proposed Conditions (Pervious Area)			
Land Use	**Area (ha)**	**HSG**	**WHC**
Pasture and Shrubs	2.06	B	150
Lawn (Channel and Open Space)	10.75	B	100
Lawn (Residential Development)	11.36	B	100
Total (Area-Weighted):	24.17		**104**

Table 3.1: Hydrologic Cycle Component Values

	Water Holding Capacity mm	Hydrologic Soil Group	Precipitation mm	Evapo-transpiration mm	Runoff mm	Infiltration* mm
Urban Lawns/Shallow Rooted Crops (spinach, beans, beets, carrots)						
Fine Sand	50	A	940	515	149	276
Fine Sandy Loam	75	B	940	525	187	228
Silt Loam	125	C	940	536	222	182
Clay Loam	100	CD	940	531	245	164
Clay	75	D	940	525	270	145
Moderately Rooted Crops (corn and cereal grains)						
Fine Sand	75	A	940	525	125	291
Fine Sandy Loam	150	B	940	539	160	241
Silt Loam	200	C	940	543	199	199
Clay Loam	200	CD	940	543	218	179
Clay	150	D	940	539	241	160
Pasture and Shrubs						
Fine Sand	100	A	940	531	102	307
Fine Sandy Loam	150	B	940	539	140	261
Silt Loam	250	C	940	546	177	217
Clay Loam	250	CD	940	546	197	197
Clay	200	D	940	543	218	179
Mature Forests						
Fine Sand	250	A	940	546	79	315
Fine Sandy Loam	300	B	940	548	118	274
Silt Loam	400	C	940	550	156	234
Clay Loam	400	CD	940	550	176	215
Clay	350	D	940	549	196	196

Notes: Hydrologic Soil Group A represents soils with low runoff potential and Soil Group D represents soils with high runoff potential. The evapotranspiration values are for mature vegetation. Streamflow is composed of baseflow and runoff.

**This is the total infiltration of which some discharges back to the stream as base flow. The infiltration factor is determined by summing a factor for topography, soils and cover.*

Topography	Flat Land, average slope < 0.6 m/km	0.3
	Rolling Land, average slope 2.8 m to 3.8 m/km	0.2
	Hilly Land, average slope 28 m to 47 m/km	0.1
Soils	Tight impervious clay	0.1
	Medium combinations of clay and loam	0.2
	Open Sandy loam	0.4
Cover	Cultivated Land	0.1
	Woodland	0.2

VALDOR ENGINEERING INC.
File: 17125
Date: March 2019

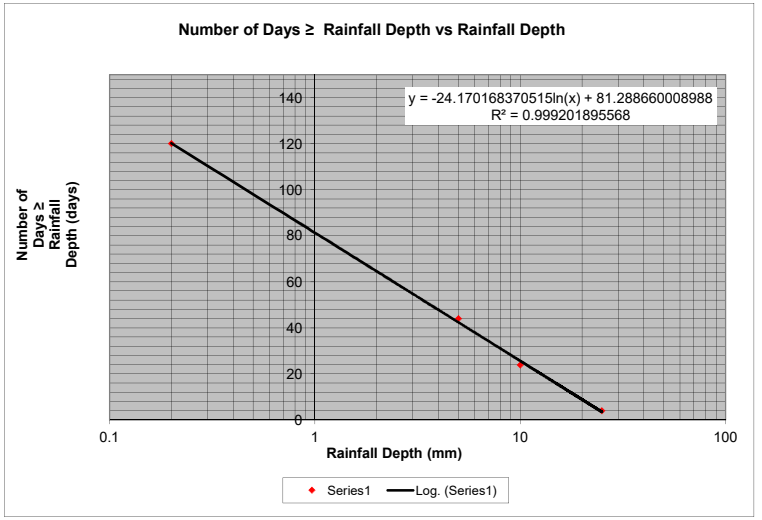
Table F.3: Infiltration Factor Calculations
Per MOE Methodology (SWM Planning & Design Manual, MOE, March 2003)

Topography	
0.3	Flat Land (avg slope < 0.06%)
0.225	0.06% to 0.27%
0.15	Rolling Land (avg slope between 0.28% and 0.38%)
0.125	0.39% to 2.7%
0.1	Hilly Land (avg slope between 2.8% and 4.7%)
Soils	
0.4	HSG A - open sandy loam
0.35	HSG AB
0.3	HSG B
0.27	HSG BC
0.23	HSG C
0.2	HSG CD - medium combinations of clay and loam
0.1	HSG D - tight impervious clay
Cover	
0.1	cultivated land (crops)
0.15	pasture, lawns
0.2	woodland (forest)

Infiltration Factor Calculations	
Existing Conditions	
0.1	Topography
0.3	Soils
0.11	Cover
0.510	Total Infiltration Factor (Existing Conditions)
Proposed Conditions	
0.125	Topography
0.3	Soils
0.15	Cover
0.575	Total Infiltration Factor (Proposed Conditions)

Table F.4: Rainfall Analysis

VALDOR ENGINEERING INC.
File: 17125
Date: March 2019



Normal Rainfall Depth (mm)	Normal Days ≥ Rainfall Depth (days)
0.2	120
5	44
10	23.8
25	3.9

Peterborough Airport Climate Normals (1981 - 2010)
712.5 Normal Annual Rainfall Depth (mm)
120 Normal Annual Days with Rainfall (≥ 0.2 mm)
855.3 Normal Annual Precipitation Depth (mm)

Simulated Depth (mm)	Simulated Days ≥ Sim Depth (days)	Average Event Depth (mm)	Simulated Days Equal to Avg Depth (days)	Assumed IA (mm)	Runoff (Rain - IA) (mm)	INF Design Storm (mm)	Event Based Maximum Design INF Depth (mm)	Event Based Design INF Depth (mm)	Annual Incremental Design INF Depth (mm)	Annual Cumulative Design INF Depth (mm)	Annual Incremental Total Rain Depth (mm)	Annual Percent of Total Rain (%)	Annual Cumulative Total Rain Depth (mm)	Annual Cumulative Percent of Total Depth (%)
0.2	126.44													
0.5	103.06	0.2 - 0.5	23.38	5.00	0.00	15.00	10.00	0.00	0.00	0.00		0.000	0.0	0.000
1.5	75.03	1	28.03	5.00	0.00	15.00	10.00	0.00	0.00	0.00	28.03	0.039	28.0	0.039
2.5	61.99	2	13.04	5.00	0.00	15.00	10.00	0.00	0.00	0.00	26.07	0.037	54.1	0.076
3.5	53.41	3	8.59	5.00	0.00	15.00	10.00	0.00	0.00	0.00	25.76	0.036	79.9	0.112
4.5	46.99	4	6.41	5.00	0.00	15.00	10.00	0.00	0.00	0.00	25.65	0.036	105.5	0.148
5.5	41.87	5	5.12	5.00	0.00	15.00	10.00	0.00	0.00	0.00	25.60	0.036	131.1	0.184
6.5	37.61	6	4.26	5.00	1.00	15.00	10.00	1.00	4.26	4.26	25.58	0.036	156.7	0.220
7.5	33.96	7	3.65	5.00	2.00	15.00	10.00	2.00	7.30	11.57	25.56	0.036	182.3	0.256
8.5	30.76	8	3.19	5.00	3.00	15.00	10.00	3.00	9.58	21.15	25.55	0.036	207.8	0.292
9.5	27.93	9	2.84	5.00	4.00	15.00	10.00	4.00	11.35	32.50	25.54	0.036	233.4	0.328
10.5	25.37	10	2.55	5.00	5.00	15.00	10.00	5.00	12.77	45.27	25.54	0.036	258.9	0.363
11.5	23.05	11	2.32	5.00	6.00	15.00	10.00	6.00	13.93	59.20	25.54	0.036	284.4	0.399
12.5	20.92	12	2.13	5.00	7.00	15.00	10.00	7.00	14.89	74.09	25.53	0.036	310.0	0.435
13.5	18.96	13	1.96	5.00	8.00	15.00	10.00	8.00	15.71	89.81	25.53	0.036	335.5	0.471
14.5	17.13	14	1.82	5.00	9.00	15.00	10.00	9.00	16.41	106.22	25.53	0.036	361.0	0.507
15.5	15.43	15	1.70	5.00	10.00	15.00	10.00	10.00	17.02	123.24	25.53	0.036	386.6	0.543
16.5	13.84	16	1.60	5.00	11.00	15.00	10.00	10.00	15.95	139.19	25.53	0.036	412.1	0.578
17.5	12.34	17	1.50	5.00	12.00	15.00	10.00	10.00	15.02	154.20	25.53	0.036	437.6	0.614
18.5	10.92	18	1.42	5.00	13.00	15.00	10.00	10.00	14.18	168.38	25.52	0.036	463.1	0.650
19.5	9.57	19	1.34	5.00	14.00	15.00	10.00	10.00	13.43	181.82	25.52	0.036	488.7	0.686
20.5	8.30	20	1.28	5.00	15.00	15.00	10.00	10.00	12.76	194.58	25.52	0.036	514.2	0.722
21.5	7.08	21	1.22	5.00	16.00	15.00	10.00	10.00	12.15	206.73	25.52	0.036	539.7	0.757
22.5	5.92	22	1.16	5.00	17.00	15.00	10.00	10.00	11.60	218.34	25.52	0.036	565.2	0.793
23.5	4.81	23	1.11	5.00	18.00	15.00	10.00	10.00	11.10	229.43	25.52	0.036	590.7	0.829
24.5	3.75	24	1.06	5.00	19.00	15.00	10.00	10.00	10.63	240.07	25.52	0.036	616.3	0.865
25.5	2.73	25	1.02	5.00	20.00	15.00	10.00	10.00	10.21	250.27	25.52	0.036	641.8	0.901
26.5	1.75	26	0.98	5.00	21.00	15.00	10.00	10.00	9.82	260.09	25.52	0.036	667.3	0.937
27.5	0.80	27	0.95	5.00	22.00	15.00	10.00	10.00	9.45	269.54	25.52	0.036	692.8	0.972
28.5	0.00	28	0.80	5.00	23.00	15.00	10.00	10.00	8.02	277.57	22.46	0.032	715.3	1.004
29	0.00	≥ 29	0.00	5.00	24.00	15.00	10.00	10.00	0.00	**277.57**	-2.79	-0.004	712.5	1.000

Table F.5: Infiltration Trench Calculation

VALDOR ENGINEERING INC.
741 Rowntree Dairy Road, Suite 2, Woodbridge, Ontario L4L 5T9
Tel: 905-264-0054 Fax: 905-264-0069
info@valdor-engineering.com www.valdor-engineering.com

Designed By: O.B.
Checked By: B.C.
Project No: 17125
Date: March 2019

Total Req'd Annual Infiltration Volume to Achieve Target (m^3)	*Total Actual Annual Infiltration Volume per Design (m^3)*	*Soil Infiltration Rate (mm/h)*	*Minimum Total Drainage Area to Infiltration Facilities (ha)*	*Maximum Trench Length per Site Plan (m)*	*Initial Abstraction (Trench Drainage Area) (mm)*	*Retention Time (hr)*	*Total Annual Rainfall Depth (Per 1981-2010 Climate Normals for Lindsay) (mm)*	*Total Rainfall Depth Available for Infiltration Per Rainfall Analysis Assuming Ia=5.0mm (mm)*	*Annual Rainfall Depth Needed to Achieve Target Infiltration (mm)*	*[1] Req'd Design Storm Depth to Achieve Annual Infiltration Requirements (Assuming Ia=5.0 mm) (mm)*	*Provided Event-Based Runoff Volume to be Infiltrated (Based on Req'd Design Storm Depth (m^3)*
21,485	21,872	30	7.88	-	5.0	48	712.5	277.57	272.7	15.0	788.0

Maximum Allowable Depth	
P, Design Soil Infiltration Rate (mm/h):	**30**
T, Drawdown Time (hr):	**48**
d, Maximum Allowable Depth (m):	**1.44**

Minimum Bottom Area	
V, Runoff Volume to Infiltrated (m^3):	**788**
P, Design Soil Infiltration Rate (mm/h):	**30**
n, Void Ratio (clear stone):	**0.40**
Δt, Drawdown Time (hr):	**48**
A, Minimum Bottom Area (m^2):	**1,368**

$$d = \frac{P \cdot T}{1000}$$ *Equation 4.2, Stormwater Management Planning and Design Manual, MOE, 2003*

$$A = \frac{1000 \cdot V}{P \cdot n \cdot \Delta t}$$ *Equation 4.3, Stormwater Management Planning and Design Manual, MOE, 2003*

Infiltration Trench Design

Infiltration Trench Location	Drainage Area (ha)	Available Infiltration Volume (m^3)	Length (m)	Width (m)	[3]Design Depth (m)	Bottom Area (m^2)	Void Ratio	Storage Volume Provided (m^3)	Lesser of Available Infiltration Volume or Storage Volume Provided (m^3)
RLCB Infiltration Trench	6.60	660.0	1,200.0	1.0	1.40	1,200	0.40	672.0	660.0
Rear-of-Lot Infiltration Trench	1.80	180.0	800.0	0.5	0.80	400	0.40	128.0	128.0

Total drainage area to infiltration trenches (ha):	**8.40**
Total Bottom Area Provided (m^2):	**1,600**
Total Infiltration Volume Used (m^3):	**788.0**

Notes:

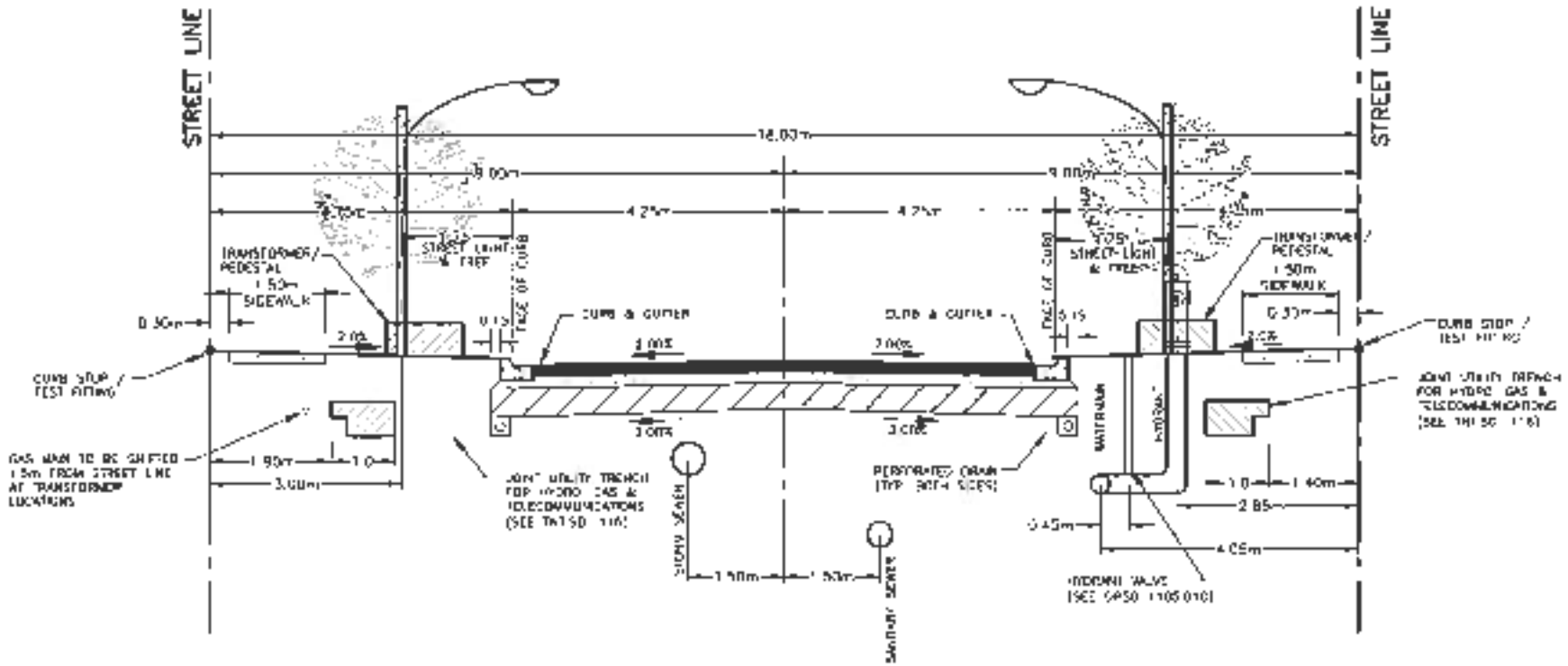
Infiltration facilities are sized based on the following criteria (SWMPDM, MOE, 2003) and/or assumptions:

(1) Infiltration trench volume should be sized based on the runoff generated by a 4-hr 15-mm event or smaller.
(2) Drainage areas should be sufficient to provide required runoff quantity.
(3) The maximum allowable depth of the infiltration facility is based on the soil infiltrate rate and the retention time.
(4) It is feasible to convey the runoff to the infiltration facility.
(5) The seasonal high water table should be at least 1 m below the infiltration trench.

APPENDIX "G"

Standard Road & Sidewalk Cross Sections

METRIC
ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN



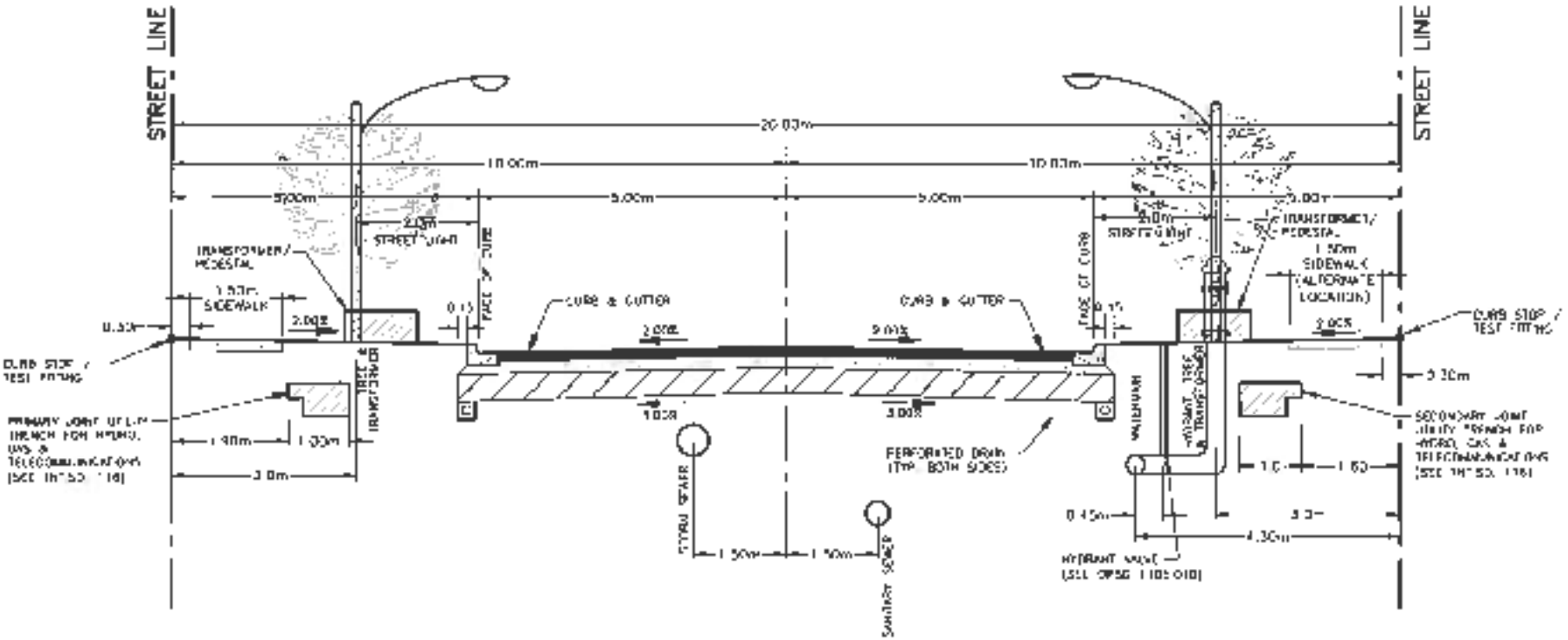
URBAN MINOR LOCAL
18.0m RIGHT-OF-WAY (8.5m ROAD)

NO.	REVISIONS	DATE	APP'D

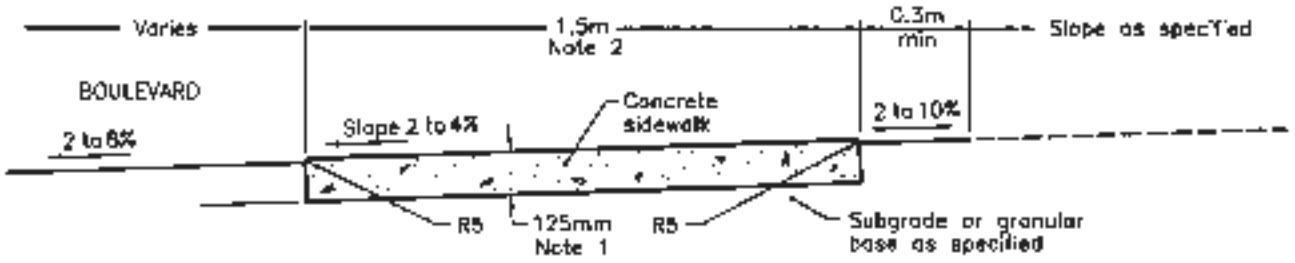
SCALE N.T.S.
DATE FEB. 2015

FIGURE G.1

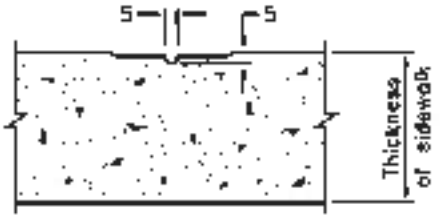
METRIC
ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN



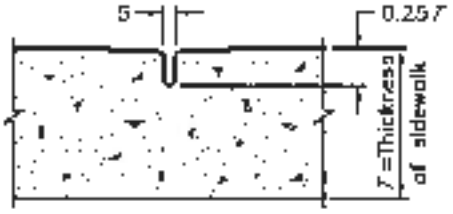
URBAN LOCAL 20.0m RIGHT-OF-WAY (10.0m ROAD)	NO	REVISIONS	DATE	APP'D	SCALE N.T.S. DATE: FEB. 2015 FIGURE G2



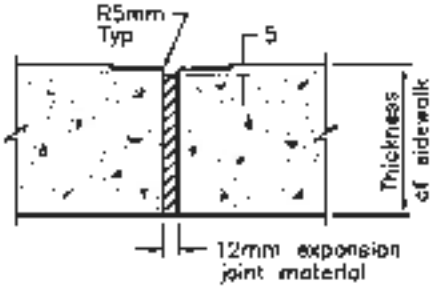
TYPICAL SECTION



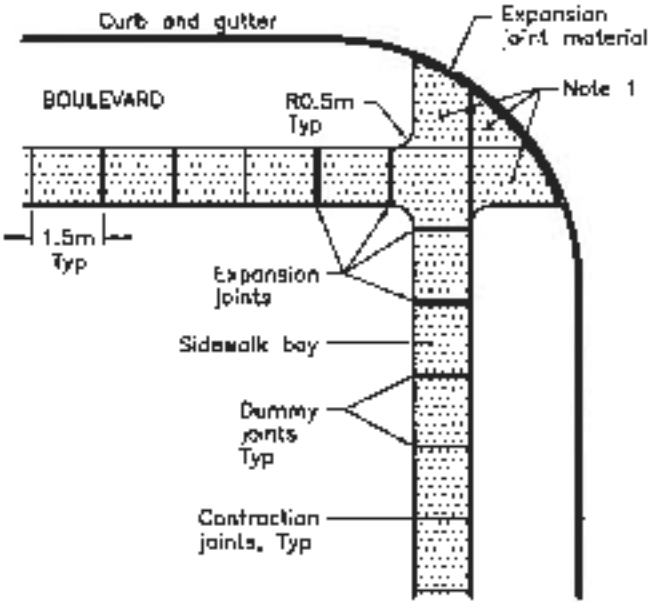
DUMMY JOINT



CONTRACTION JOINT



EXPANSION JOINT



JOINT LAYOUT

NOTES:

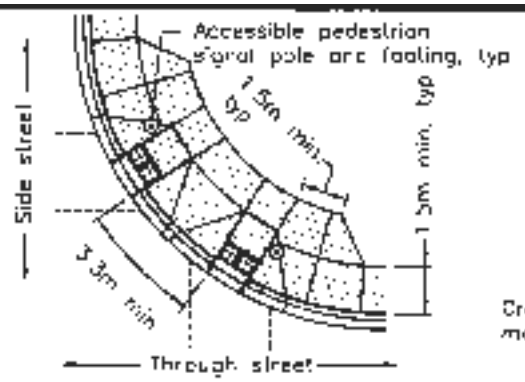
1 Sidewalk thickness at residential driveways and adjacent to curb shall be 150mm. At commercial and industrial driveways, the thickness shall be 200mm.

2 Sidewalk width shall be increased to 2.4m at schools, bus stops, and other high pedestrian areas.

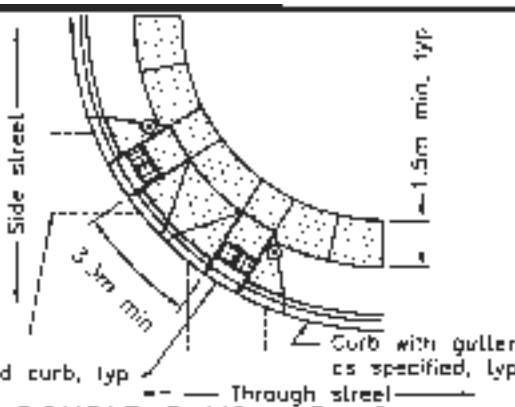
A This OPSD to be read in conjunction with OPSD-310.030.

B All dimensions are in millimetres unless otherwise shown.

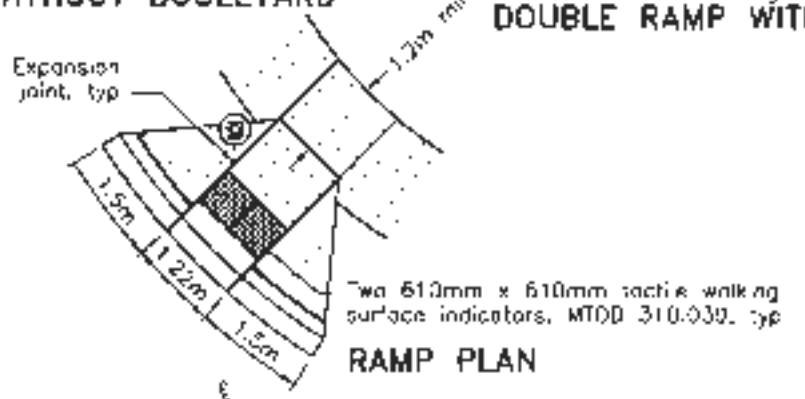
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2005	Rev 1
CONCRETE SIDEWALK		
	OPSD – 310.010	



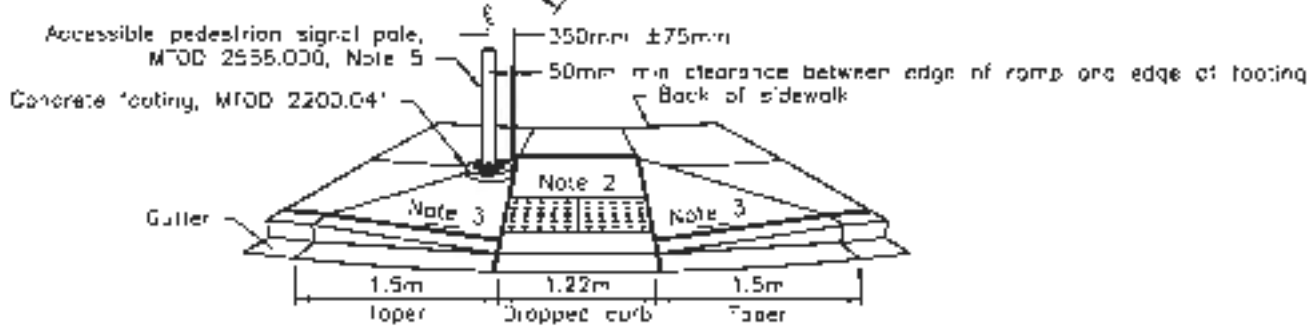
DOUBLE RAMP WITHOUT BOULEVARD



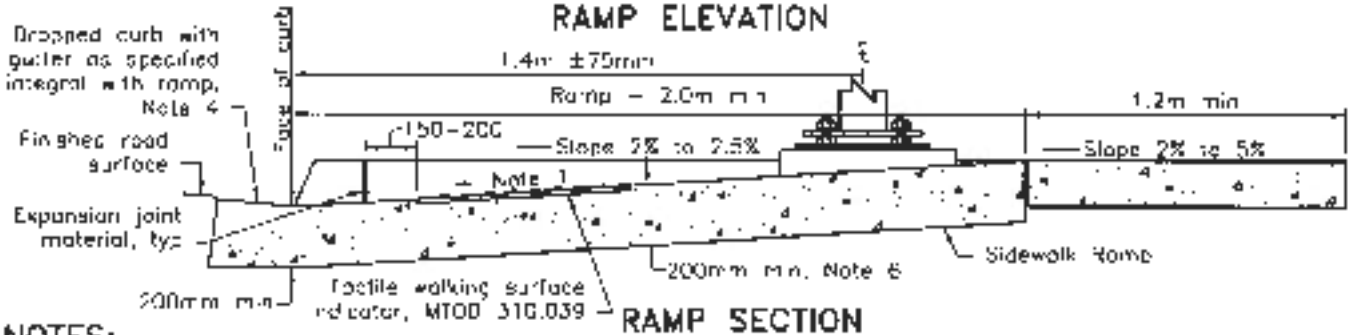
DOUBLE RAMP WITH BOULEVARD



RAMP PLAN



RAMP ELEVATION



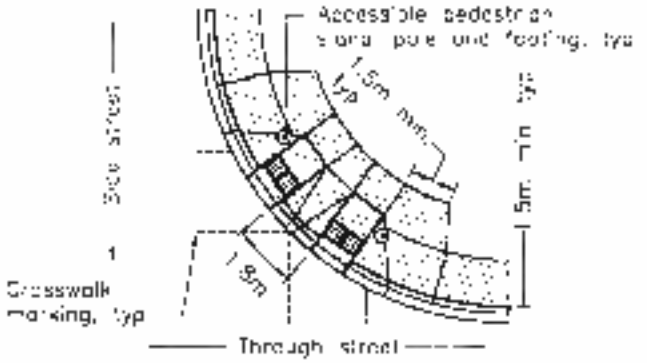
RAMP SECTION

NOTES:

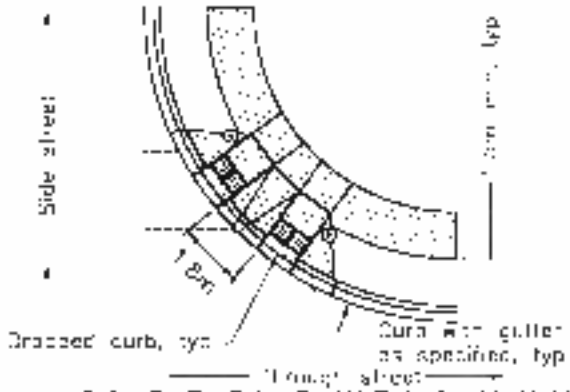
1 Slope of ramp shall not exceed 10%.
2 Cross slope of ramp shall not exceed 2% in either direction.
3 Cross slope of flared side of ramp shall not exceed 10%.
4 Dropped curb at ramp shall be modified to eliminate 30 mm step at gutter.
5 Accessible pedestrian signal to have tactile arrow that aligns with direction of crosswalk.
6 Minimum thickness of ramp is 200mm. Minimum thickness of sidewalk and flared sides adjacent to ramp is 150mm.

A Where only one crosswalk is present at an intersection, only one curb ramp is required.
B All dimensions are in millimetres unless otherwise shown.

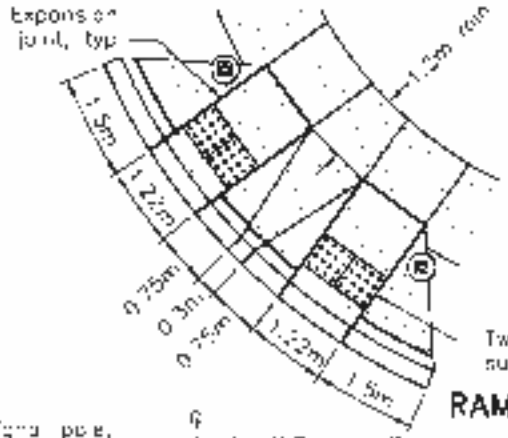
MINISTRY OF TRANSPORTATION ONTARIO DRAWING	Mar 2014	Rev
CONCRETE SIDEWALK RAMPS AT SIGNALIZED INTERSECTIONS		
	MTOD – 310.030	



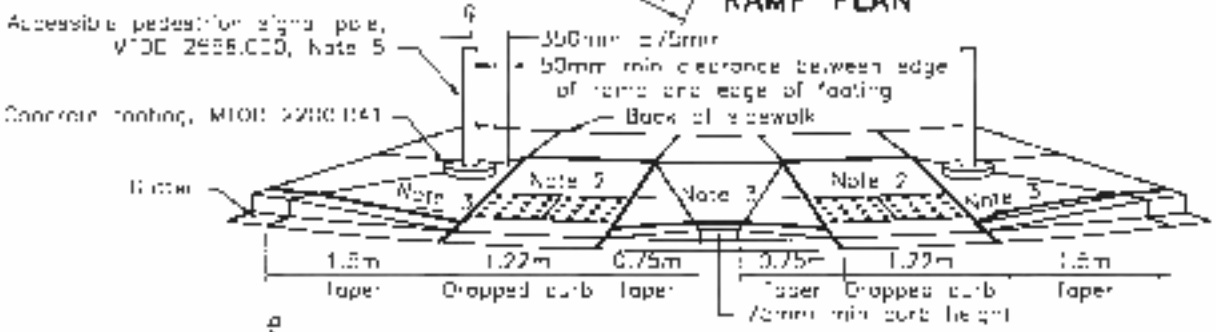
DOUBLE RAMP WITHOUT BOULEVARD



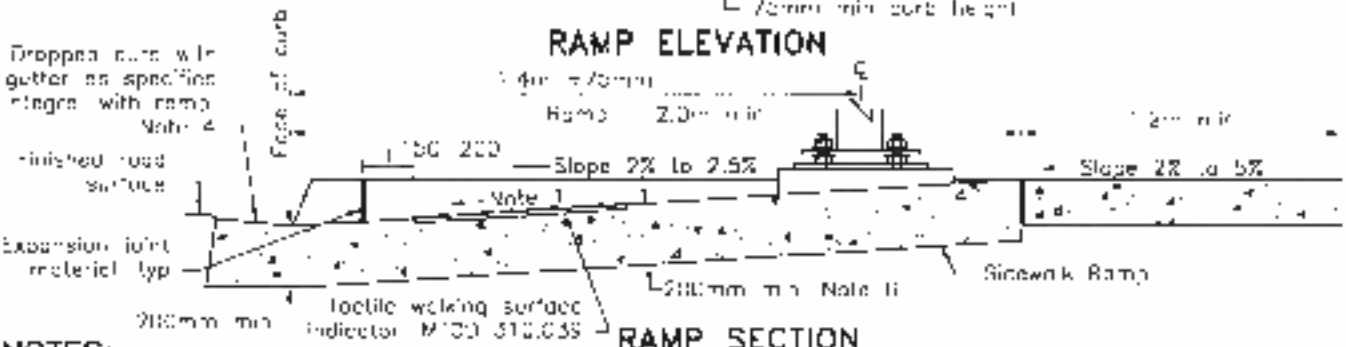
DOUBLE RAMP WITH BOULEVARD



RAMP PLAN



RAMP ELEVATION

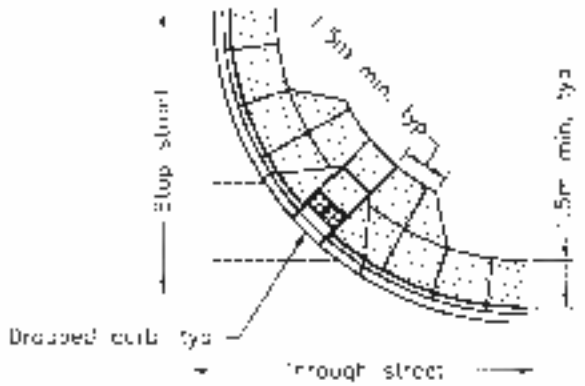


RAMP SECTION

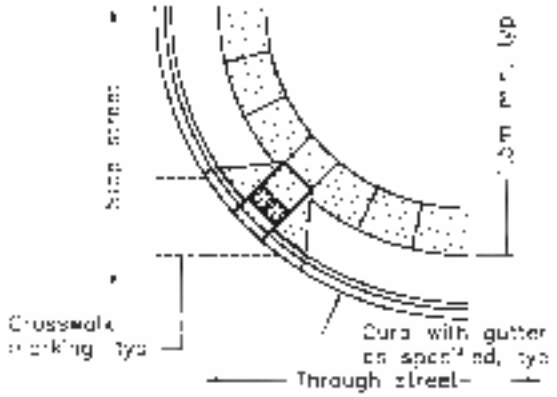
NOTES:

1 Slope of ramp shall not exceed 10%.
2 Cross slope of ramp shall not exceed 2% in either direction.
3 Cross slope of flared side of ramp shall not exceed 10%.
4 Dropped curb at ramp shall be modified to eliminate 30 mm step at gutter line.
5 Accessible pedestrian signal to have tactile arrow that aligns with direction of crosswalk.
6 Minimum thickness of ramp is 200mm. Minimum thickness of sidewalk and flared sides adjacent to ramp is 150mm.
7 All dimensions are in millimetres unless otherwise shown.

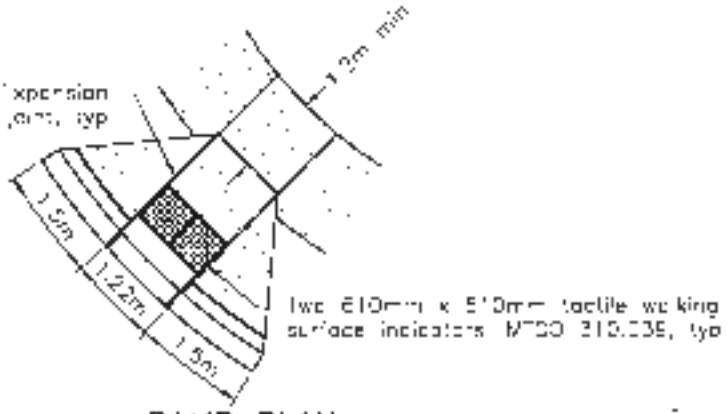
MINISTRY OF TRANSPORTATION ONTARIO DRAWING	Mar 2014	Rev
CONCRETE SIDEWALK RAMPS AT SIGNALIZED INTERSECTIONS WITH INTERSECTING CROSSWALKS		
	MTOD – 310.031	



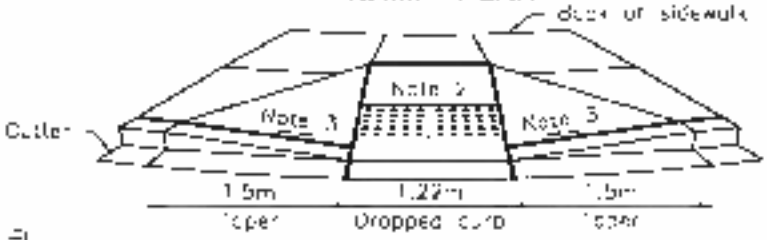
SINGLE RAMP WITHOUT BOULEVARD



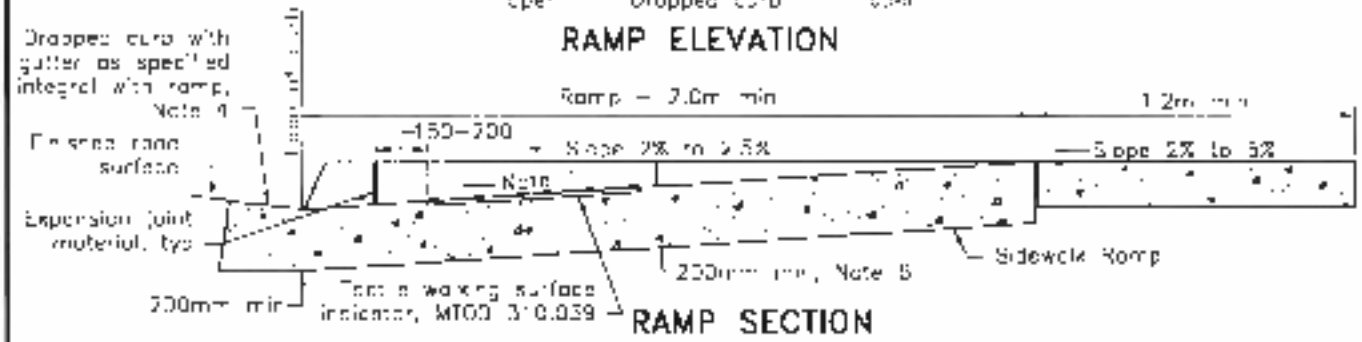
SINGLE RAMP WITH BOULEVARD



RAMP PLAN



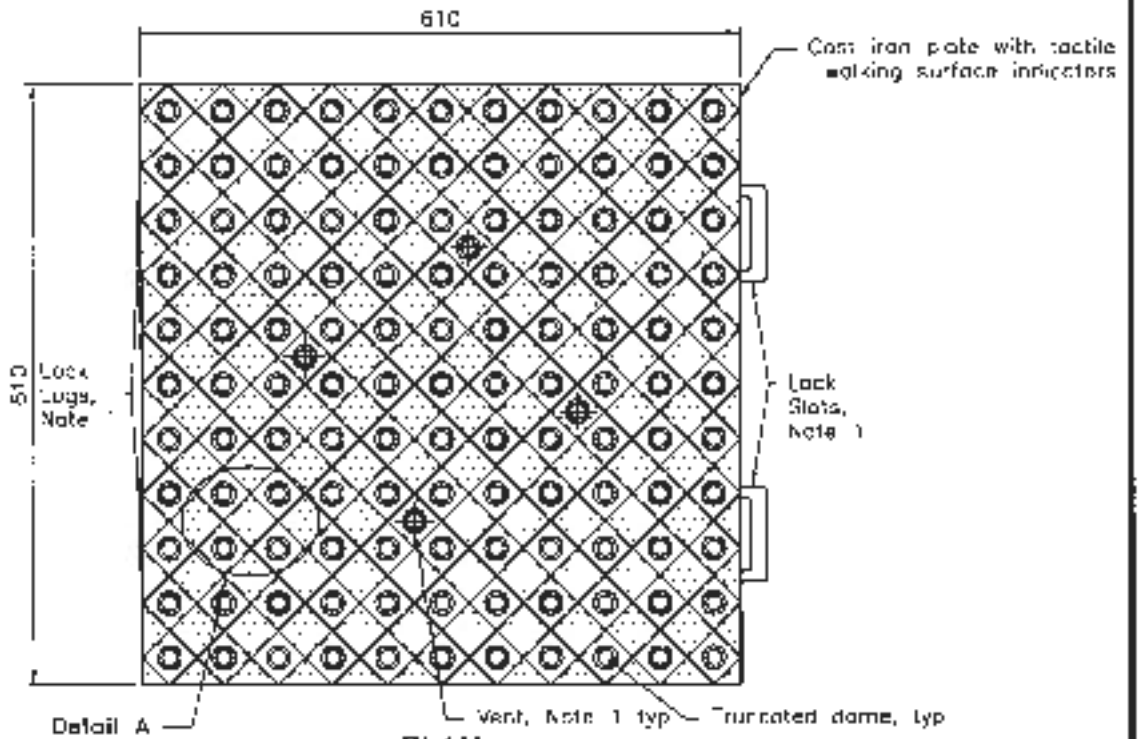
RAMP ELEVATION



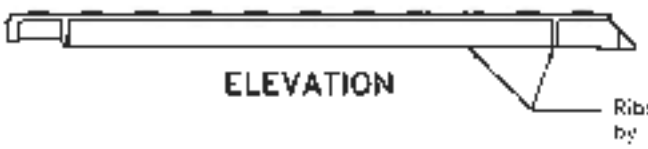
RAMP SECTION

NOTES:
1 Slope of ramp shall not exceed 10%.
2 Cross slope of ramp shall not exceed 2% in either direction.
3 Cross slope of flared side of ramp shall not exceed 10%.
4 Dropped curb at ramp shall be modified to eliminate 30 mm step at gutter line.
5 Minimum thickness of ramp is 200mm. Minimum thickness of sidewalk and flared sides adjacent to ramp is 150mm.
6 All dimensions are in millimetres unless otherwise shown.

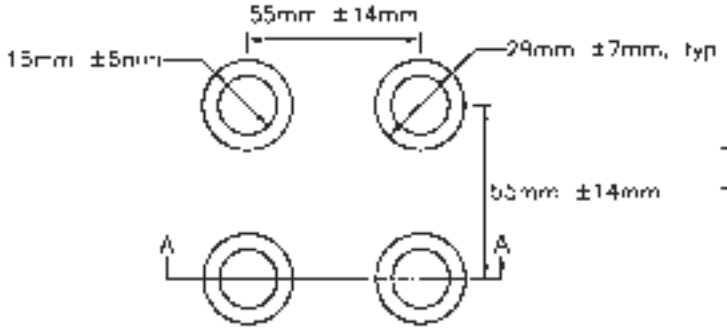
MINISTRY OF TRANSPORTATION ONTARIO DRAWING	Mar 2014	Rev
CONCRETE SIDEWALK RAMPS AT UNSIGNALIZED INTERSECTIONS		
	MTOD – 310.032	



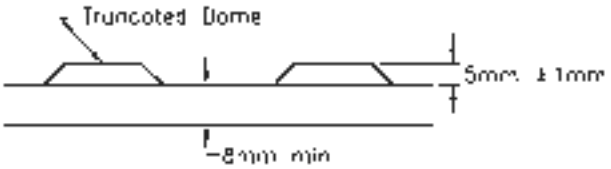
PLAN



ELEVATION



DETAIL A
TRUNCATED DOMES PLAN



SECTION A–A

NOTES:

1 Lock lug and slots to interconnect adjacent cast iron plates, and vents, are proprietary to manufacturer

A The coefficient of friction of the cast iron plate shall not be less than 0.8.

B All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	Mar 2014	Rev
CONCRETE SIDEWALK RAMPS TACTILE WALKING SURFACE INDICATORS COMPONENT		MTOD – 310.039

APPENDIX "H"

Geotechnical Bore Holes

Source:
Portion of drawing prepared by Valdor Engineering Inc., entitled "preliminary Sewer Alignment", provided to Geo-Logic on February 27, 2014.

TEST HOLE LOCATION PLAN

HYDROGEOLOGICAL ASSESSMENT
PROPOSED RESIDENTIAL DEVELOPMENT
FALLIS LINE
CAVAN-MONAGHAN, ONTARIO

PROJECT NO. :	G024822A1
SCALE :	1:10,000
DATE :	APRIL, 2014
PLATE NO. :	4

GEO-LOGIC INC.
347 PIDO ROAD, UNIT 29
PETERBOROUGH, ON K9J 6X7

REFERENCE No: GJ24822A1 ENCLOSURE No: A-5

www.geo-logic.ca

BOREHOLE No.: BH-5
ELEVATION: 249.3 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Tyworth II Development
PROJECT: Proposed Fella Line Residential Development
LOGGED BY: B. McFarlane DATE: March 14, 2014
DRILLING COMPANY: Eastern Soil Investigation METHOD: Track mounted drill rig
NOTES: Elevations interpolated from Valdo Engineering's drawing "Preliminary Sewer Alignment" provided on February 27, 2014

LEGEND

- BS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Depth (ft)	Depth (m) Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 15 cm / 15 in.	Penetration Index N	Shear test (Cu) Sensitivity (St) Water content (%) Atterberg limits (%) ○ Field ● Lab; N Value (blows / 0.3 m); RQD CORE	COMMENTS
	0.0		GROUND SURFACE						10 20 30 40 50 70 80 90	
1			TOPSOIL (300 mm)							WL - 0.0 m 4/15/2014
2	0.4		TILL - Light brown Clayey Silt with Sand, moist compact	SS-1	100	27	2 3 7	10		
3	1.0									WL - 0.1 m 3/25/2014
4										
5	1.5		Moist to wet	SS-2	100	19	12 13 11	24		
6	2.0									
7										
8	2.3		Wet, very dense	SS-3	100	9	14 15 17	32		
9										
10	3.0									
11	3.0		Light brown Silty Clay, wet firm to hard	SS-4	100	11	12 20 28	48		WL - 2.4 m 3/14/2014 Upon completion of drilling
12										
13	4.0									
14										
15	4.6		Trace Gravel	SS-5	100	31	3 4 3	7		
16										
17	5.0									
18										
19										
20	6.0		Light brown Silty Sand, with Clay and Gravel, wet compact to dense	SS-6	100	8	5 19 7	26		
21	6.1									
22										
23	7.0									
24										
25										
26				SS-7	100	13	9 21 18	39		
27	8.0									
28										
29										
30	9.0									
31				SS-8	50	8	11 8 8	16		SS-8: 26% Gravel 34% Sand 40% Silt and Clay 23% between 5-75 µm
32	9.8									
33	10.0		END OF BOREHOLE							
34										

BOREHOLE LOG GEOTECH GJ24822A1 14APR, 15 BOREHOLE LOGS GPJ GEO_LOGIC.GDT 4/15/14

REFERENCE No.: G024622A1 ENCLOSURE No.: A-6

www.geo-logic.ca

BOREHOLE No.: BH-6
ELEVATION: 246.1 m

BOREHOLE REPORT

Page 1 of 1

CLIENT: Townhill Development
PROJECT: Proposed Falls Line Residential Development
LOGGED BY: B. McFarlane DATE: March 17, 2014
DRILLING COMPANY: Eastern Soil Investigation METHOD: Track mounted drilling
NOTES: Elevations interpolated from Valdor Engineering's drawing "Preliminary Sewer Alignment", provided on February 27, 2014

LEGEND
- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth (m)	m Below Existing Grade	Description of Soil and Bedrock	Type and Number	Recovery (%)	Moisture Content (%)	Blows per 6 in / 15 cm	Penetration Index (N)	Comments
	0.0	GROUND SURFACE						
		TOPSOIL (400 mm)						
1.0	0.4	TILL - Light brown Clayey Silt, with Sand, moist, compact	SS-1	25	65	2 3 3	6	WL - 0.9 m 3/17/2014 Upon completion of drilling
2.0	1.5	Light brown Silty Clay, wet, stiff	SS-2	100	16	4 5 8	14	
	2.3	Trace Gravel	SS-3	100	27	7 9 7	16	
3.0	3.0	Light brown Clayey Silt with Sand, trace Gravel, wet, very dense	SS-4	100	17	4 6 4	10	SS-4: 12% Gravel 19% Sand 69% Silt and Clay 26% between 5-75 µm PI: 7 % LL: 21 %
5.0			SS-5	100	7	18 30 50/5"	100/	Borehole caved at 5.0 m
6.0			SS-6	100	7	36 22 28	50	
	5.6	END OF BOREHOLE						

Depth scale: ft 0–34; m 0.0–10.0

Graph columns: Shear test (Cu), Sensitivity (S) — △ Field, □ Lab; ○ Water content (%); Atterberg limits (%); "N" Value (Blows / 0.3 m); ● RQD; CONE; scale 10 20 30 40 50 60 70 80 90

REFERENCE No.: G024822A1 ENCLOSURE No.: A-7

www.geo-logic.ca

BOREHOLE No.: BH-7

ELEVATION: 245.3 m

BOREHOLE REPORT

CLIENT: Tower Hill Development

PROJECT: Proposed Falls Line Residential Development

LOGGED BY: B. McFarlane DATE: March 17, 2014

DRILLING COMPANY: Eastern Soil Investigation METHOD: Track mounted drilling

NOTES: Elevations interpolated from Valdor Engineering's drawing 'Preliminary Sewer Alignment', provided on February 27, 2014

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Shear test (Cu) △ Field □ Lab; Sensitivity (S); ○ Water content (%); Atterberg limits (%); × Penetrometer; ● RQD; DCPT

Depth (ft)	Depth (m)	m Below Existing Grade	Description of Soil and Bedrock	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	Comments
0	0	0.0	GROUND SURFACE						WL - 0.1 m 3/25/2014
		0.2	TOPSOIL (200 mm)						WL - 0.0 m 4/15/2014
			TILL - Light brown Clayey Silt with Sand, trace Gravel, moist, compact						
3	1.0			SS-1	100	22	5 8 11	19	
6	2.0			SS-2	100	17	7 8 17	15	WL - 2.1 m 3/17/2014 Upon completion of drilling
8				SS-3	100	[illegible]	6 11 11	22	
10	3.0	3.0	Wet						
11				SS-4	100	16	5 7 8	15	
16	5.0			SS-5	100	18	5 4 5	10	Borehole caved at 5.2 m
21				SS-6	100	13	8 10 10	20	
		5.6	END OF BOREHOLE						

REFERENCE No: GO24822A1 ENCLOSURE No.: A-8

www.geo-logic.ca

BOREHOLE No.: BH-8

ELEVATION: 247.5 m

BOREHOLE REPORT

Page 1 of 1

CLIENT: Towerhill Development

PROJECT: Proposed Halls Line Residential Development

LOGGED BY: B. McFarlane DATE: March 17, 2014

DRILLING COMPANY: Eastern Soil Investigation METHOD: Track mounted drill rig

NOTES: Elevations interpolated from Valdor Engineering's drawing "Preliminary Sewer Alignment" provided on February 27, 2014

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in / 15 cm Penetration Index N	Shear and (Cu) Sensitivity (St) Water content (%) Atterberg limits (%) ○ "N" Value (blows / 0.3 m) ● RQD ▽ Core	COMMENTS
0		0.0		GROUND SURFACE					10 20 30 40 50 60 70 80 90	
				TOPSOIL (300 mm)						Open borehole remained dry throughout drilling operation
		0.3		TILL - Ugili brown Clayey Silt, with Sand, trace Gravel, moist, compact						
	1.0				SS-1	50	30	4 5 5 — 12		
	2.0				SS-2	100	19	6 8 9 — 17		
	3.0				SS-3	100	19	8 13 14 — 27		
	4.0				SS-4	100	17	7 13 15 — 28		
		4.6		Very dense						
	5.0				SS-5	75	10	10 8 10 — 18		
	6.0				SS-6	100	11	30 38 27 — 65		
		8.6		END OF BOREHOLE						
	7.0									
	8.0									
	9.0									
	10.0									

REFERENCE No. Q2014822A1 ENCLOSURE No.: A-9

www.geo-logic.ca

BOREHOLE No.: BH-9
ELEVATION: 245.7 m

BOREHOLE REPORT

Page 1 of 1

CLIENT: Towerhill Development

PROJECT: Proposed Fallis Line Residential Development

LOGGED BY: B. McFarlane DATE: March 18, 2014

DRILLING COMPANY: Eastern Soil Investigation METHOD: Track mounted drill rig

NOTES: Elevations interpolated from Valdor Engineering's drawing 'Preliminary Sewer Alignment', provided on February 27, 2014

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	Shear test (Cu) Sensitivity (S) Water content (%) Atterberg limits (%) 'N' Value (blows / 0.3 m)	Field Lab RQD Core	COMMENTS
		0.0		GROUND SURFACE		%	%		N	10 20 30 40 50 60 70 80 90		
		0.3		TOPSOIL (300 mm)								
				TILL - Light brown Clayey Silty Sand, with Gravel, moist, compact								Open borehole remained dry throughout drilling operation
	1.0	1.5		Very dense	SS-1	50	25	2 5 7	12			
	2.0				SS-2	100	26	6 10 12	22			
	3.0				SS-3	100	9	48 37 50+0"	100+			
					SS-4	100	8	20 28 42	70			SS-4: 16% Gravel 36% Sand 48% Silt and Clay 21% between 5-75 µm
	4.0											
	5.0				SS-5	100	6	30 50+4"	100+			
	6.0	6.1		END OF BOREHOLE	AS-6		11					
	7.0											
	8.0											
	9.0											
	10.0											

BOREHOLE LOG GEOTECH Q2014822A1 1404-27 TESTHOLE LOGS.GPJ GEO-LOGIC.GDT 4/2/14

REFERENCE No.: 1502402241 ENCLOSURE No.: A-10

www.geo-logic.ca

BOREHOLE No.: BH-10

ELEVATION: 253.1 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Tewelni Development

PROJECT: Proposed Fallis Line Residential Development

LOGGED BY: B. McFarlane DATE: March 18, 2014

DRILLING COMPANY: Eastern Soil Investigation METHOD: Track mounted drilling

NOTES: Elevations interpolated from Valdor Engineering's drawing "Preliminary Sewer Alignment", provided on February 27, 2014

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 0.3m / 15 cm Penetration Index N	Shear Test (Cu) Sensitivity (S) Water content (%) Atterberg Limits (%) "N" Value (blows / 0.3 m)	COMMENTS
		0.0		GROUND SURFACE					10 20 30 40 50 60 70 80 90	
		0.3		TOPSOIL (300 mm)						
	1.0			TILL - Brown Sandy Silt with Clay, trace Gravel moist, compact to very dense	SS-1	100	10	5 11 37	33	
	2.0				SS-2	100	7	12 20 17	37	
					SS-3	100	6	15 25 28	53	
	3.0	3.0		(Till)	SS-4	100	10	50/2"	100+	
	4.0									
	5.0				SS-5	100	9	7 10 11	21	WL - 4.3 m 3/19/2014 Upon completion of drilling Borehole caved at 5.0 m
	6.0	6.2		END OF BOREHOLE	SS-6	100	10	50/4"	100+	
	7.0									
	8.0									
	9.0									
	10.0									

#BOREHOLE LOGS (GEOTECH) (GENERAL) - Metric.grp "BOREHOLE LOGS GPJ GEOLOGIC.GDT 4/9/14

REFERENCE No.: GU24822A1 ENCLOSURE No.: A-13

www.geo-logic.ca

BOREHOLE No.: BH-13
ELEVATION: 250.1 m

BOREHOLE REPORT

Page 1 of 1

CLIENT: Townhill Development
PROJECT: Proposed Falls Line Residential Development
LOGGED BY: B. McFarlane DATE: March 16, 2014
DRILLING COMPANY: Eastern Soil Investigation METHOD: Track mounted drilling
NOTES: Elevations interpolated from Valdor Engineering's drawing "Preliminary Sewer Alignment", provided on February 27, 2014

LEGEND
SS - SPLIT SPOON
AS - AUGER SAMPLE
ST - SHELBY TUBE
CS - CORE SAMPLE
▼ - WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6in / 15cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
		0.4		TOPSOIL (350 mm)						
		0.3		TILL - Light brown Clayey Silt with Sand, moist compact						
	1.0			Trace Gravel, compact to very dense	SS-1	25	30	4 4 17	25	WL - 0.1 m 4/15/2014
	2.0				SS-2	100	13	13 20 20	40	
					SS-3	100	11	10 20 10	30	WL - 1.9 m 3/25/2014
	3.0	3.0		Wet	SS-4	25	13	20 25 25	50	
	4.0									
	5.0				SS-5	100	10	28 50+4"	100+	WL - 3.7 m 3/18/2014 Upon completion of drilling
	6.0	6.2		END OF BOREHOLE	SS-6	100	8	50+4"	100+	
	7.0									
	8.0									
	9.0									
	10.0									

Shear Vane (Cu) Field / Lab
Sensitivity (St)
Water content (%) wp wl
Atterberg limits (%)
"N" Value (blows / 0.3 m)
RQD
CORE

BOREHOLE LOG GEOTECH STANDARD TEMPLATE TESTHOLE LOGS.GPJ GEOLOGIC.GDT 4/3/14

REFERENCE No.: G024822A1 ENCLOSURE No.: A-15

www.geo-logic.ca

BOREHOLE No.: BH-16
ELEVATION: 245.2 m

BOREHOLE REPORT

Page 1 of 1

CLIENT: Towerhill Development
PROJECT: Proposed Falls Lane Residential Development
LOGGED BY: B. McFarlane DATE: March 18, 2014
DRILLING COMPANY: Eastern Soil Investigation METHOD: Track mounted drill rig
NOTES: Elevations interpolated from Valdor Engineering's drawing "Preliminary Sewer Alignment", provided on February 27, 2014

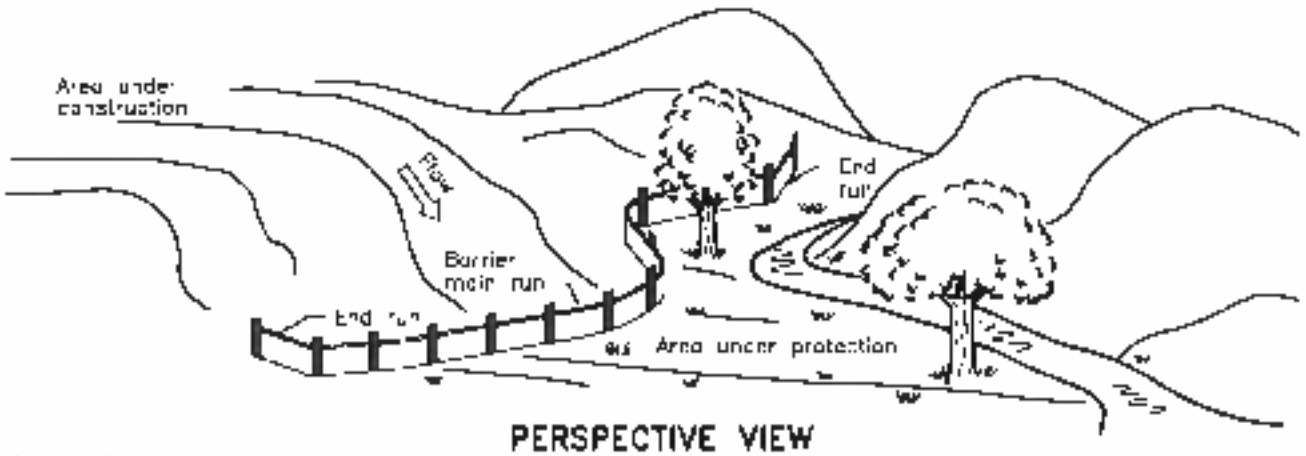
LEGEND
SS - SPLIT SPOON
AS - AUGER SAMPLE
ST - SHELBY TUBE
CS - CORE SAMPLE
▼ - WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. (15 cm) Penetration Index N	Shear test (Cu) Sensitivity (S) Water content (%) Atterberg limit (%) Field / Lab; "N" Value (blows / 0.3 m); Rod Core	COMMENTS
		0.0		GROUND SURFACE					10 20 30 40 50 60 70 80 90	
		0.0		TOPSOIL (300 mm)						
1	0.3			TILL - Brown Clayey Silt, with Sand, Trace Gravel, moist, compact to dense						
2	0.6									
3	1.0				SS-1	50	27	3 4 6 / 10		WL - 0.4 m 4/15/2014 WL - 0.7 m 3/25/2014
4										
5					SS-2	100	31	5 6 8 / 20		
6	2.0							12		
7										
8					SS-3	100	9	12 22 22 / 44		
9										
10	3.0							21		
11					SS-4	100	8	22 20 / 42		WL - 3.0 m 3/13/2014 Upon completion of drilling
12										
13	4.0									
14										
15								15		
16	5.0				SS-5	75	17	11 16 / 27		
17								15		
18										
19	6.0				AS-6		12			
20		6.1		END OF BOREHOLE						
21										
22										
23	7.0									
24										
25										
26	8.0									
27										
28										
29										
30	9.0									
31										
32										
33	10.0									
34										

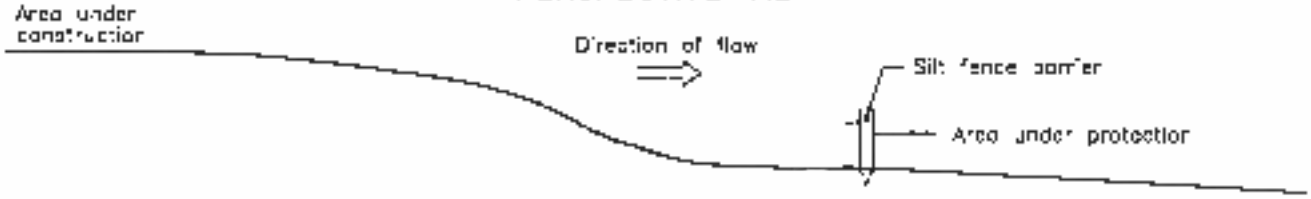
BOREHOLE LOG (WITH GRAPH) 1444-02 TESTHOLE LOGS.GPJ GEOLOGIC.GDT 4/3/14

APPENDIX "I"

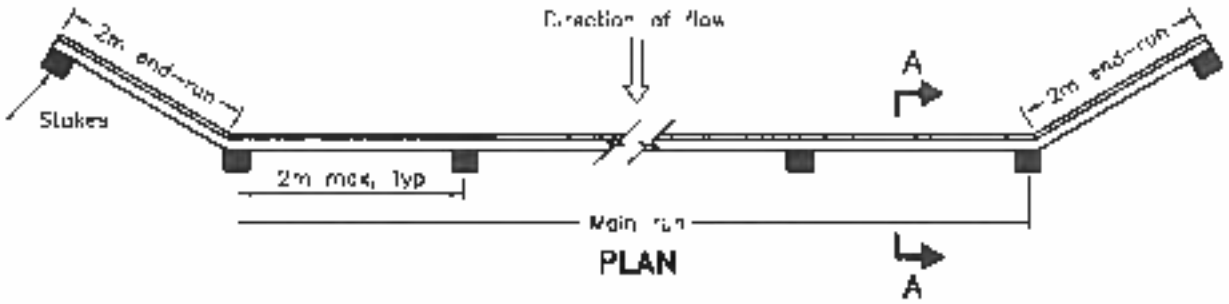
Erosion & Sediment Control Details



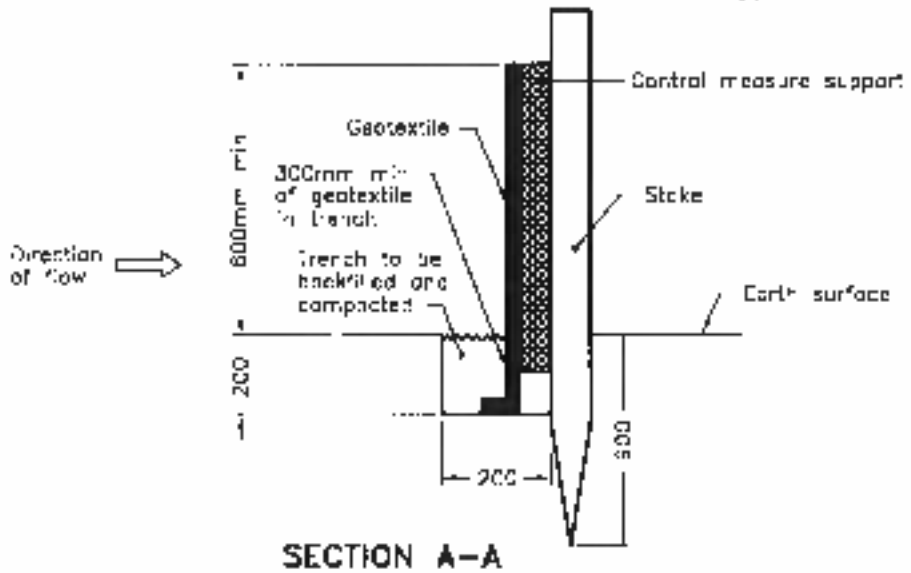
PERSPECTIVE VIEW



SECTION



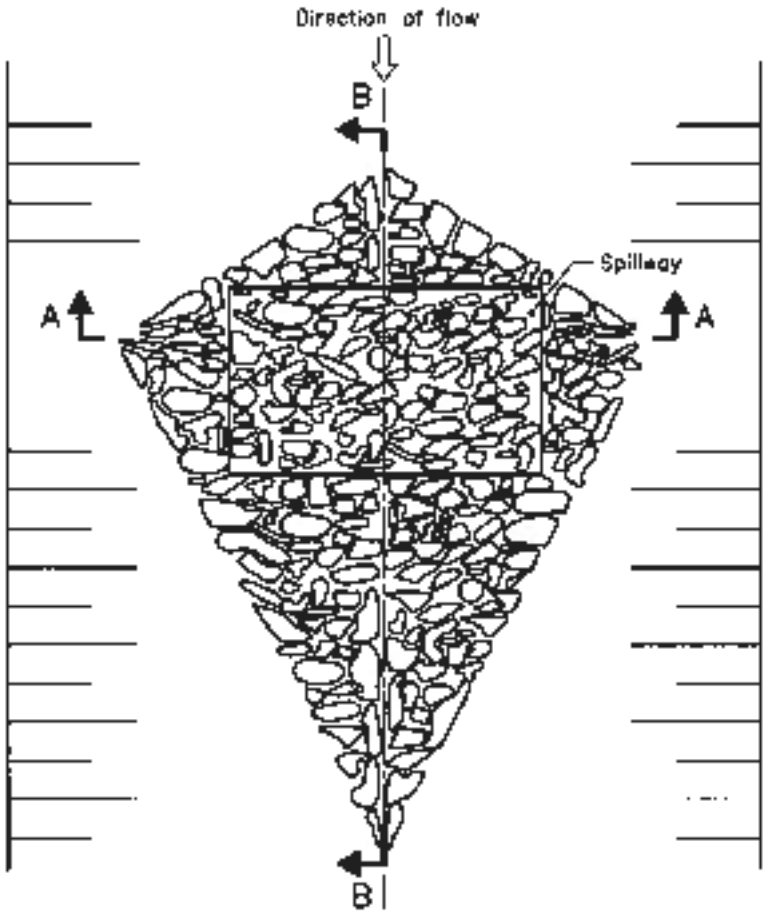
PLAN



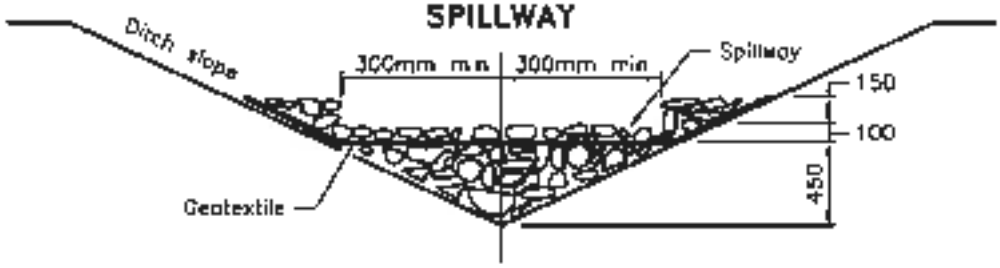
SECTION A–A

NOTE:
All dimensions are in millimetres unless otherwise shown.

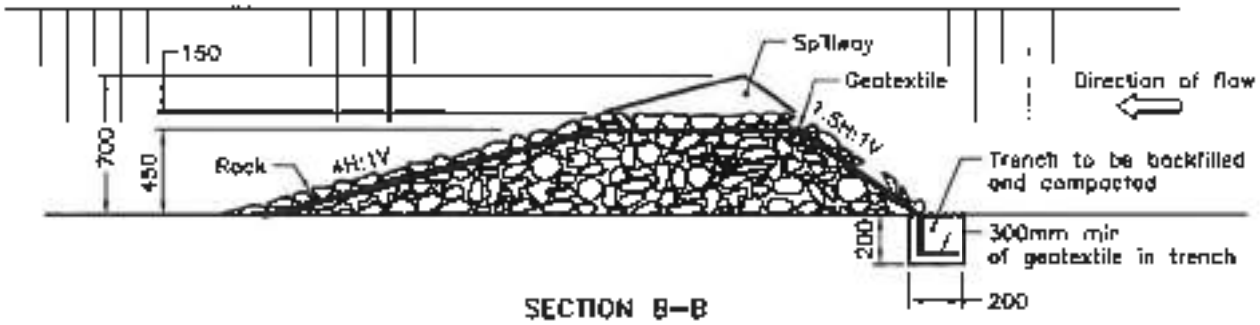
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1	
HEAVY–DUTY SILT FENCE BARRIER			OPSD 219.130



PLAN
SPILLWAY



SECTION A–A



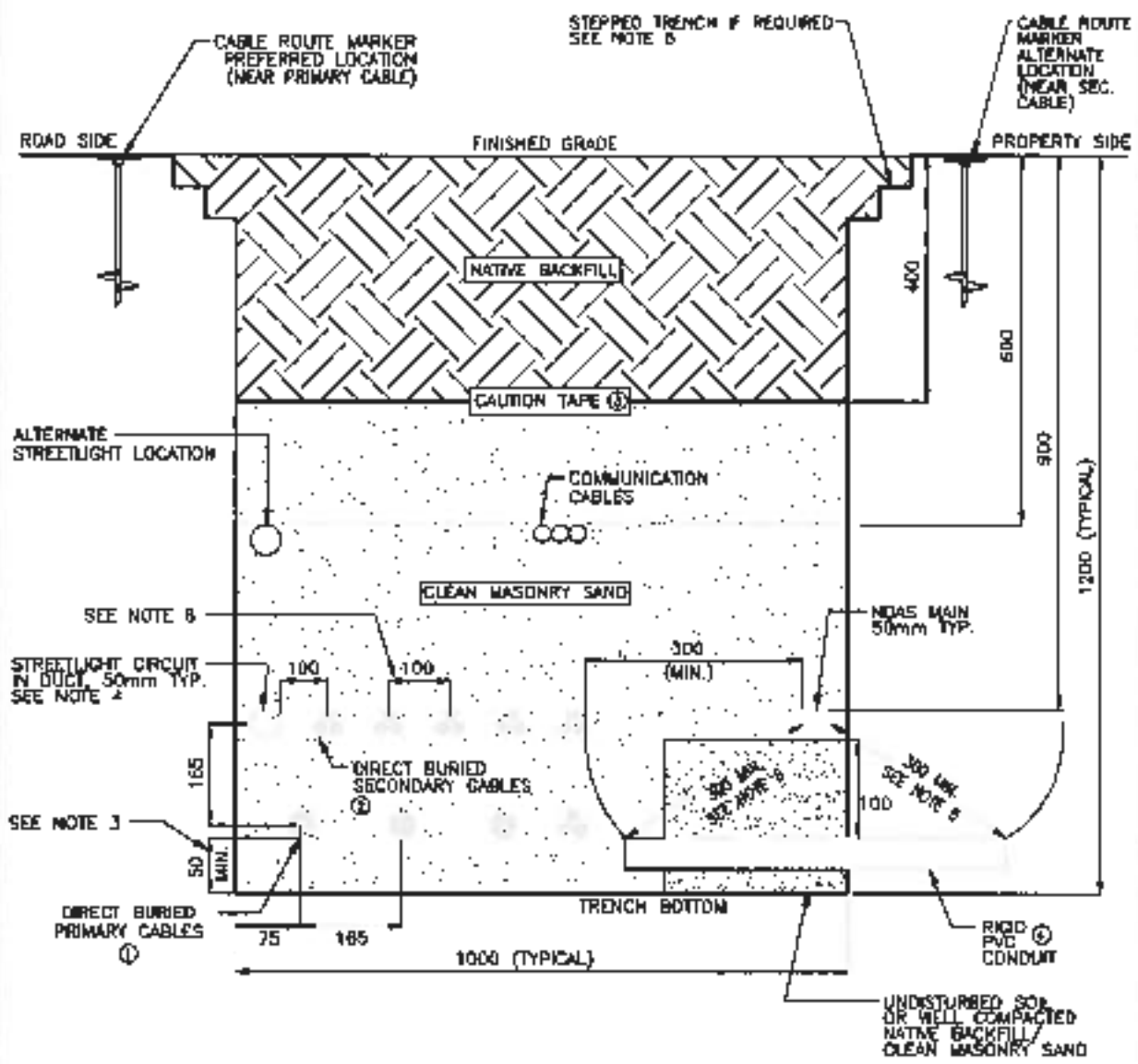
SECTION B–B

NOTE:
All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1
ROCK FLOW CHECK DAM V–DITCH		OPSD 219.210

APPENDIX "J"

Typical Joint Utility Trench & Street Light Detail



NOTES:
1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. ALL SEPARATIONS AND DEPTHS OF BURIAL ARE MINIMUM.
3. IN THE PRESENCE OF SHARP ROCK, DEBRIS OR RUBBLE, INCREASE SAND PADDING TO 100mm.
4. STREETLIGHT WIRE DUCT MAY BE INSTALLED AT A REDUCED BURIAL DEPTH, UP TO A MINIMUM DEPTH OF 300mm, SEPARATIONS TO SUPPLY CABLE BASED ON MAXIMUM STREETLIGHT DUCT DIAMETER OF 50mm.
5. MUST MAINTAIN 300mm MINIMUM FROM ALL EXPOSED SUPPLY CABLES TO GAS MAIN, WHEN CROSSING GAS MAIN AND IF 300mm OF CLEAN VERTICAL SEPARATION IS NOT ACHIEVABLE, SECONDARY CABLES SHALL BE INSTALLED IN SHORT LENGTH OF RIGID PVC CONDUIT.
6. CONSTRUCTION, STEPPING AND/OR SUPPORTING OF THE TRENCH WALL TO CONFORM TO THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT.
7. NON-ENERGIZED CIRCUITS OR JOINT USE COMPONENTS MAY BE OMITTED, PROVIDED THAT CLEARANCES AND SEPARATIONS ARE MAINTAINED. PRIMARY CABLES (IF PRESENT) MUST BE INSTALLED ON THE BOTTOM ROW OF SUPPLY CABLES. SECONDARY CABLE BUNDLES MAY BE SUBSTITUTED IN PLACE OF PRIMARY CABLE(S) WHEN REQUIRED.
8. INTERMITTENT CONTACT IS ALLOWABLE BETWEEN SECONDARY CABLES WHERE REQUIRED.

PART #	MASTER MATERIAL #	DESCRIPTION	QTY.
①	30010134 30000000	[illegible]	
②	30000000 30000000	[illegible]	
③	30000000	[illegible]	
④	30000000	[illegible]	

REFERENCES:
SECTION 1 – DEFINITIONS
SECTION 30 – CONSTRUCTION GUIDE
SECTION 16 – MATERIALS

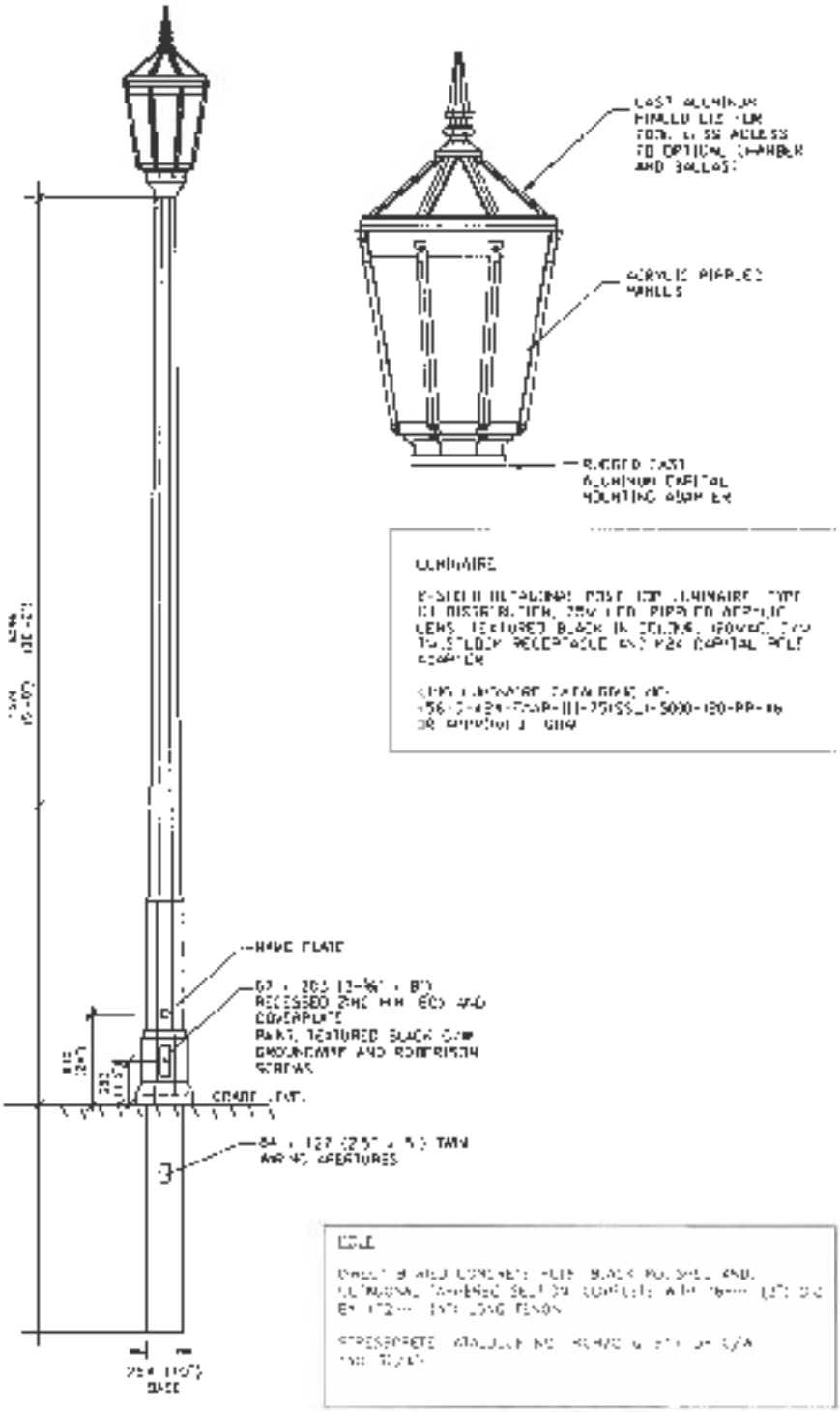
Rev. No.	Issue Date	Revision	Drawn By	Approved By	Date
02	JULY 2011	GENERAL REVISIONS	PC		

Hydro One Networks Inc.

Drawn:	Approved:	Date:
P.CIARMOLI	#	JULY.20,2011

JOINT TRENCH - POWER, COMMUNICATION & GAS DISTRIBUTION LINES - TYPICAL

Dwg. No. DU-03-206.1 Rev. 02



LUMINAIRE

POST

MILLBROOK SUBDIVISION
PHASE 2
TOWERHILL DEVELOPMENT INC.

STREET LIGHT DETAIL

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers

SCALE	N.T.S.	CKD. BY	D.G.	DWG.	J-1
DATE	SEP 2018	DRAWN BY	J.K.	PROJECT	17125